

MILITARY REVIEW

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VOLUME XXXVI

NUMBER 7

Command and General Staff College



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The MILITARY REVIEW disseminates modern military thought and current Army doctrine concerning command and staff procedures of the division and higher echelons and provides a forum for articles which stimulate military thinking. Authors, civilian and military alike, are encouraged to submit articles which will assist in the fulfillment of this mission.



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INDOCHINA

The Last Year of the War

Communist Organization and Tactics

Bernard B. Fall

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

WHEN on 7 May 1954, at about 1900, Platoon Commander Chu Ba The of the Vietnam People's Army (VPA) planted the red flag with the gold star of the Communist-led Democratic Republic of Vietnam (DRVN) atop the headquarters bunker of Dien Bien Phu, a new era opened in Asian warfare. An army that had begun its existence 10 years ago as a small guerrilla force had annihilated in open combat the cream of a well-trained Western army equipped with nearly all modern implements of war short of atomic weapons.

This Communist victory had its roots in two different sets of reasons. One set of reasons is inherent to the terrain and to the People's Army itself—its organization, training, and tactics. These will be the subject of the present article. The other set of reasons is imputable to the tactics of the French Union Forces during the last year of the war. They will

be discussed in a subsequent article, to be published in the December issue of the **MILITARY REVIEW**. Both articles together should give a picture of the interplay of those various factors and their eventual effect upon the outcome of the war.

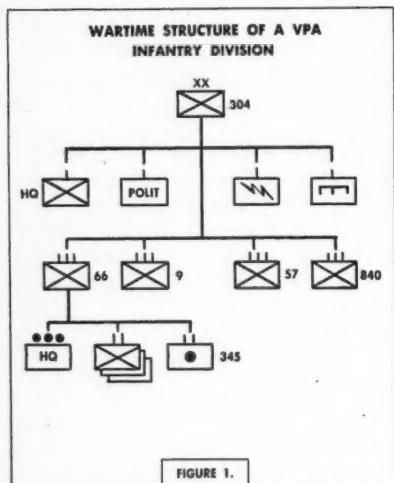
The VPA is composed of three different combat echelons. The hard core of the VPA is composed of its approximately 10 regular divisions—9 infantry and 1 "heavy" artillery and engineering division (see Figures 1 and 2). They are known as the Main Force (*chu luc*). It is they who bore the brunt of all major operations between 1950 and 1954: the border offensive of 1950, the 1952 offensives into northwestern Vietnam, the stabs into Laos in 1953, and, finally, the liquidation of the airhead of Dien Bien Phu. The *chu luc* units of the VPA are well-equipped and its infantry battalions had a distinct superiority in firepower—particularly in the field of 81-mm and 122-mm mortars—over the opposing French units.

Not all regular units operated along the main battlelines. For example, during 1953 and 1954 a sizable part of the 320th Infantry Division, VPA, along with the 42d, 46th, and 50th independent regiments, operated well within the French Union

Efficient Communist guerrilla warfare behind the French Union lines had weighted the scales of war heavily in favor of the VPA prior to Dien Bien Phu, and even before the development of the Navarre Plan

lines in support of regional and semi-mobile militia battalions (*Tieu-Doan Tap Trung Tinh*). Those regional units form the second-echelon troops. They have neither the training nor the equipment for large-scale maneuvering, but their superior knowledge of the terrain makes them extremely useful as scouting or screening units for infiltrated regular units.

Lastly, the third combat echelon was



composed of the locally raised militia units (*du-kich*). It is the *du-kich*, unrecognizable because they wear no uniforms and continue to live in their native villages to take up arms for a specific mission only, who do most of the communications sabotage, local espionage, sniping, reconnoitering, and who, in the past, often fought costly rear-guard actions to permit the escape of cornered regular units.

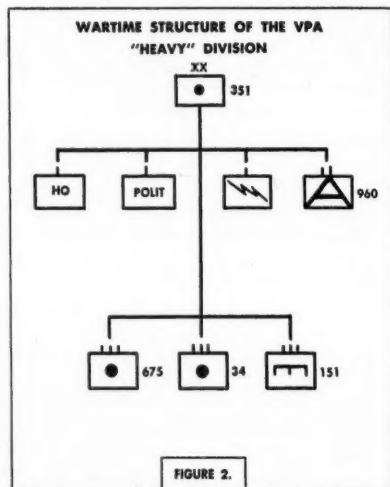
VPA and Communist Party

As a glance at an organization chart of the VPA shows (see Figure 3), the political control apparatus within the VPA is extremely important. Indeed, General Vo Nguyen Giap, the DRVN Vice Premier, Minister of Defense, and commander in

chief of the VPA since its inception, openly declared that: "The military is the [Communist] Party's essential arm for the attainment of any political aim."

There exist cells of the Vietnam *Dang Lao-Dong*—the "Labor Party" which succeeded the Indochinese Communist Party in 1951—in every VPA platoon. At platoon level there are "political agents" reporting on all signs of political weakness to their own political commissar (*Chinh Uy*) who is attached to every unit at battalion level and above.

The political commissars of the VPA have far-reaching powers even in the field of military strategy and tactics. A DRVN decree of 1950 created "Front Command Committees with Political Preponderance"

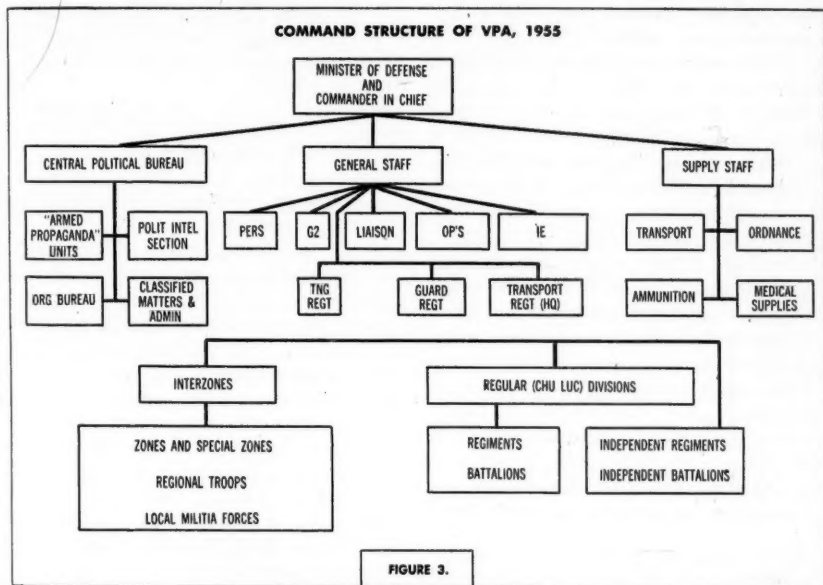


in which the views of the political commissar on a given tactical situation prevail over those of the military commander and deputy commander of the unit. It is obvious that under such conditions the VPA military commander is little more than a tool of his own political machine, with little chance of deviating from a given line. However, frictions between the political commissars and the military com-

manders occur. The author spoke in 1953 to a Communist officer who had deserted from the VPA side after *successful* completion of an operation, because he had been criticized in front of his troops by the commissar for "errors" he allegedly had committed.

This constant political indoctrination has made over the VPA soldier from an

units of the VPA, in the militia forces as well as among the regulars. "Death Volunteer" units whose members would throw themselves with a load of explosives, "kamikaze" fashion, against a French tank or against the firing slits of bunkers, proved particularly effective in attacks against fortified positions and were difficult to neutralize. Feats of the



illiterate peasant into an efficient fighting machine, much in the fashion of the Chinese Communist as described in a thorough study by L. M. Chassin, the former Commanding General of the French Far Eastern Air Force:

In the day's work of the Red soldier, the Marxist political lesson plays as important a part as the arms manual. Taken in hand by intelligent leaders, the armed peasant rapidly becomes a fanatic, an apostle of the new religion.¹

This fanaticism could be found in many

¹ General L. M. Chassin, *La Conquête de la Chine par Mao Tse-tung*, Payot, Paris, 1951, pp 232-33

"Death Volunteers," along with others emphasizing strict obedience to orders, are often played up in DRVN propaganda to its troops, such as the following incident:

During the attack against the French post of Vinh Trach, the comrade company commander gave an order to the comrade in charge of the BAR to rise and to fire upon the blockhouse. The comrade rose immediately although he was to be sacrificed before he could even fire a shot.

It is obvious that Western fighting methods are not particularly well-adapted to cope with an enemy using such tactics, and

until the end of the war in Indochina, French unit commanders throughout Indochina were haunted by the problem of having to cope with a "Death Volunteers" attack.

VPA Tactics—1953-54

In October 1950, at the end of the first Communist offensive which had cost the French their string of forts along the Chinese border, General Giap held a staff study with the political commissars of the VPA's crack 98th Infantry Regiment, in the course of which he developed the outline of the operation he was going to fight so successfully over the next 4 years:

During the first and second phase we gnawed away at the forces of the enemy, in the third phase we must annihilate them. . . .

In order to pass over to the general counteroffensive (GCO) the following conditions must be met:

Superiority of our forces over those of the enemy.

The international situation must be to our advantage.

The [local] situation must evolve in our favor.

. . . we shall benefit from foreign aid in order to pass over to the GCO [but]

merely to count upon such help would be proof of subjectivism and light-mindedness.

. . . other factors may also play in our favor: [French] difficulties in political, economic, or financial matters; protest movements against the war in the [French and Vietnamese Nationalist] army and among the people.

When we shall have reached the third phase, we shall use the following tactical principles to fulfill our strategic mission:

Mobile war, as principal activity.

Guerrilla war, as a secondary activity.

Positional warfare, also secondary.

The counteroffensive phase:

. . . the third phase may last over an extended period because we need time, but our possibilities in receiving aid from abroad will also be quite extensive.

It might be considered a tribute to Giap's remarkable military acumen—he is a French-educated high school professor with a Ph.D. in history and no formal military training—that he was able to carry through his plan to the last iota in less than 4 years. On the other hand, it must surprise the military reader that the French High Command—which had been in possession of Giap's plan since late 1952, when a copy of it was captured by French paratroop raiders—had in no appreciable way reacted to meet the new challenge.

With clockworklike precision, Giap now began to eliminate all threats to his rear areas. The end of 1950 saw all of north-eastern Vietnam outside of the Red River Delta in Giap's hands. A solid link with his main training and supply bases in Red China was now established. Night after night, hundreds of trucks now brought the long-awaited modern equipment for the GCO, as well as thousands of Red Chinese instructors and specialists from other Communist countries. The year

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1951 brought Marshal Jean de Lattre de Tassigny as French commander in chief to Indochina and with him a series of sharp defeats for Giap.³ But Giap's green *chu luc* regulars learned from their own defeats: Direct attacks against the fortified "De Lattre Line" of bunkers and blockhouses were abandoned in favor of a thorough political and guerrilla infiltration of the delta, while the main forces of Giap proceeded to further consolidate their hold upon northern Laos and the tribal Thai territory of North Vietnam.

On 11 October 1952 three VPA divisions once more crossed the Red River, destroyed the small French garrisons covering the hill line between the Red and Black Rivers, and reached the latter on 23 October after a forced march of more than 60 miles through thick jungle. A French airborne counterstab against the enemy communications hub of Yen Bay, followed by a tank-supported overland operation, was disregarded by Giap as being basically too weak to endanger his movement toward Laos.

After an initial attempt at attacking frontally the newly fortified French airhead at Na-San failed, Giap simply bypassed the position, leaving to the French Air Force the burdensome task of providing logistical support for a 12,000-man force uselessly bottled up 150 miles behind enemy lines. He continued his sweep forward, occupying the then unimportant and undefended position of Dien Bien Phu, until early in January 1953 when he reached his line of departure for the first Communist offensive into Laos. In the meantime, the VPA's guerrillas behind French lines had not remained inactive.

Communist Guerrilla Tactics

In Indochina prevalent types of terrain have brought about four major types of guerrilla warfare: urban terrorism; rice field and swamp warfare; hill and mountain warfare; and jungle warfare.

Of the four, the first is in no way different from similar operations in other parts of the world. In Vietnam it was particularly effective in view of the latent sympathies of a large part of the population with the terrorists, providing them with shelter and intelligence. Particularly well-conceived operations include the sabotaging of the Hanoi electrical plant by a group of saboteurs posing as repairmen, and the destruction in the spring of 1954 of nearly 40 planes—the Communists claim 62—on the Cat Bi, Do Son, and Gia-Lam airbases of North Vietnam by guerrilla demolition squads.

The second type of guerrilla warfare, fought in the marshy and waterlogged rice flatlands which include nearly all of Vietnam's populated areas, large cities, and major communications lines, can be considered as the "local speciality," and is radically different from any of the guerrilla tactics thus far described in available United States Army Field Manuals.

Throughout most of the Vietnamese flatlands—and also those of much of China, Indonesia, Thailand, Cambodia, and Burma—communications are limited to the tops of dikes of different construction, with the smallest barely wide enough for a column marching single file, while the largest often may carry a double track motor highway or railroad. Such communications lines proved to be the number one target of Communist guerrillas in Indochina. Their success in either destroying them or in maintaining them in a constant state of insecurity robbed the French Union Forces of nearly one-third of their combat personnel, not to speak of the gigantic effort it required from the engineering and signal units diverted from other tasks to road and telegraph line rebuilding.

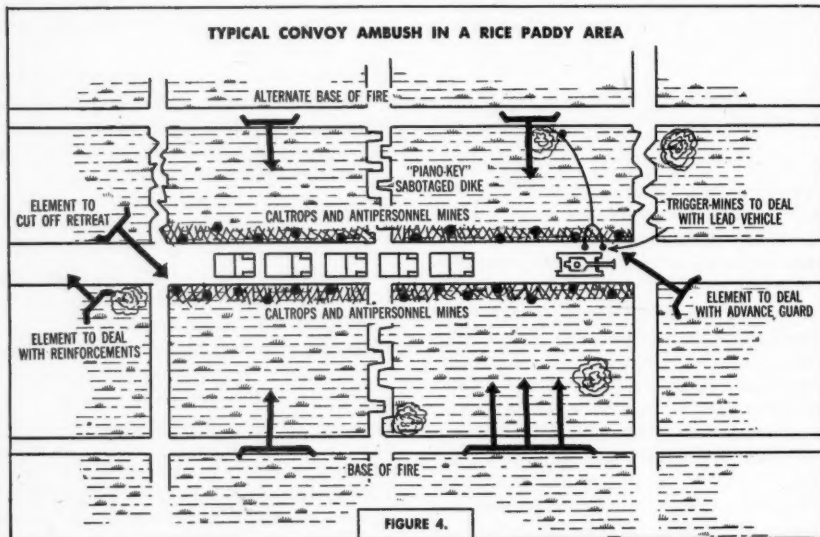
Guerrilla attacks in Vietnam, however, were not limited to the roads themselves but also included the convoys that circulated on them. Ambushes generally took place (see Figure 4) in an open stretch

³ "Indochina—the Seven-Year Dilemma," *Military Review*, October 1953, p. 28

of field broken by some bushes or hedges, or an old pagoda. Hand-triggered mines were used to disable the lead vehicle, thus immobilizing the convoy. The rear-guard vehicle was dealt with similarly, or was destroyed by rocket launcher (bazooka) or mortar fire. Once the convoy is pinned down, the stage is set for its general attack.

According to American practice in such a case—which was also French practice in the early stages of the war—the escorting

themselves and to concentrate the fire of the heavy weapons of the convoy on major enemy targets while radioing for help. Air support in such cases proved particularly effective, since the enemy generally was deployed in a clearly defined target area. Counterattacking a Communist ambush with infantry forces of the convoy itself was considered as costly and of little value since every dike provided a natural covering position for retreating enemy forces. In clement weather, helicopters and light



units of the convoy detrucked and took cover in the road ditch opposite to the apparent line of enemy fire. In Vietnam such a procedure usually led the detrucked unit into terrain that was either mined or heavily spiked with caltrops of a crude but very effective model (see Figure 5), and also exposed to enemy fire from a secondary base. If panic ensued, the convoy usually could be considered a total loss.

It became French standard practice to take cover atop the dike under the vehicles

planes flying as convoy scouts proved effective in foiling ambushes; however, this was only possible in view of the fact that the enemy in Indochina had no air force of his own and, until Dien Bien Phu, was not believed to possess an effective anti-aircraft artillery.

Hill and mountain guerrilla warfare was widely practiced by Communist units in the tribal Thai areas and in Laos. The terrain most suitable for such operations is that covered with 6-foot tall "elephant grass." As in the case of jungle warfare,

units generally had to progress single file and thus were unable to bring their weapons to bear upon an enemy only yards away. In such terrain, air reconnaissance was well-nigh useless, unless the aircraft hovered practically at grass-top level, in which case it was extremely vulnerable even to small-arms fire. The usual counter-measure against that type of ambush was to avoid beaten paths wherever possible, and to have a light scouting screen deployed on both sides of the column. However, only larger columns have the necessary manpower to do so, and since the scouts then must hack their own path through the brush, the risk of losing them piecemeal may outweigh that of progressing in a body. The best method seems to be to separate the column into several elements sufficiently apart to make their falling together into an ambush unlikely, while still being close enough to each other for mutual support in the case of an attack against one of the column elements.

Jungle warfare in Indochina followed the usual rules with which American forces in Burma and the Pacific became familiar during World War II. Perhaps it may be useful to stress here again the overwhelming ineffectualness of combat airpower in that type of operation. Roads hacked in the jungle by thousands of Communist slave laborers over a distance of more than 300 miles supplied the four VPA divisions operating in the Dien Bien Phu area with probably more than 100 tons of ammunition and food a day.

In spite of total French mastery of the air, French air reconnaissance photographs throughout the entire Indochina war told an eloquent story of the capacity of the Communist logistical system to switch rapidly from truck convoys to hordes of human porters. When three regular VPA divisions broke through 200 miles of jungle in less than 15 days in January 1954 and cut Indochina in two for nearly 2 weeks, they did so *without*

using a single motor vehicle, but were supported by a logistical lifeline of coolies stretching all the way from the Thai border back to the hills of South China. In the words of a French officer:

Not even an atom bomb could have helped us; assuming that it would have hit one of their coolie trails, they would merely have bypassed 'ground zero' and hacked themselves a new path through the jungle.

However, the type of political-military guerrilla warfare fought by the Commu-



nists within the main French Union position, the Red River Delta, proved to be the operation that, more than Dien Bien Phu, finally broke the back of the French war effort in Indochina. As the author has stated elsewhere:

Depleted of their best troops for the sake of Dien Bien Phu, the French garrisons in the delta now had to face the brutal reality that their high command had refused to face for the past 5 years; the fact that it was the adversary who had effective control of most of the Red River Delta.

Figures 6 and 7 show clearly what is meant by this statement. Figure 6 shows

VIETMINH GUERRILLA INFILTRATION BEHIND FRENCH LINES SITUATION MAY 1953

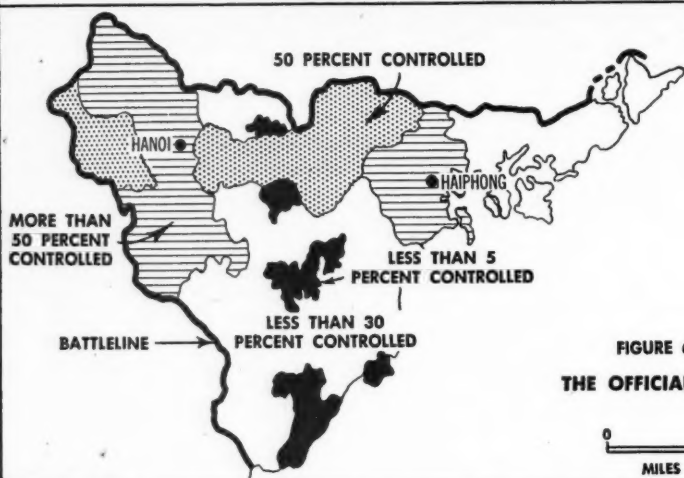


FIGURE 6.
THE OFFICIAL VIEW

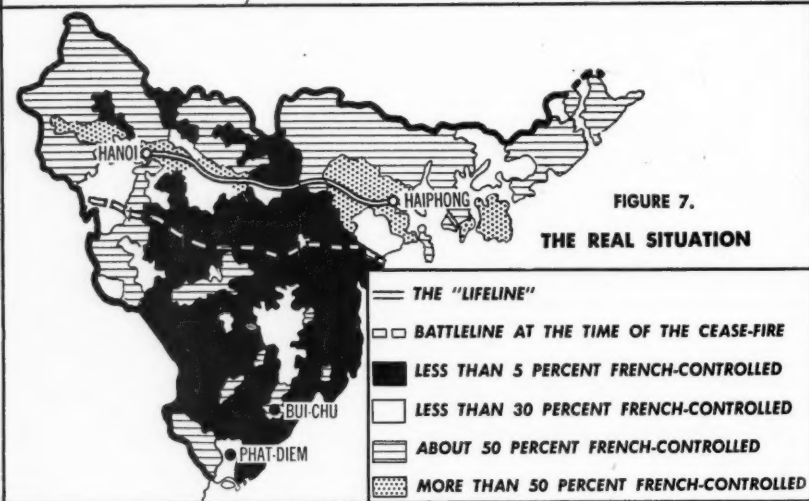


FIGURE 7.
THE REAL SITUATION

At no time did the French succeed in wiping out the guerrilla threat in their own backyard. This is why the entire southern part of the Red River Delta, with the Catholic bishoprics of Bui-Chu and Phat-Diem, had to be abandoned after the loss of Dien Bien Phu freed another 40,000 Communist soldiers for an all-out attack against the French Hanoi-Haiphong "lifeline."

in black the areas within the delta which the French Command acknowledged, 1 year before Dien Bien Phu, to be Communist-controlled in the military sense, although other large areas were admittedly "safe" only during daytime. Figure 7 was made by the author after careful research in the same area at the same time, backed by interviews of local French military and Vietnamese civilian officials. All agreed that the area actually under the administrative control of the Communists, that is, the area where they collected the taxes, ran the village government, and indoctrinated the children in the schools, was far greater than the extent of VPA military control.

It is worthy of note that precisely the southern area of the Red River Delta which already was so heavily infiltrated in 1953 was the first to be evacuated by the French when, after the fall of Dien Bien Phu, they began to retreat toward the Hanoi-Haiphong "lifeline," with 80,000 to 100,000 Communist guerrillas swarming around them, sabotaging their supply lines and attacking their convoys. By then the French within the delta were, in the apt image of a French officer, like *des grumeaux dans la soupe*—"breadcrumbs in the soup"—and fighting degenerated into a series of small-size Dien Bien Phus as French garrisons desperately fought their way out of trap after trap in an effort to keep their communications lines open.

In other words, efficient Communist guerrilla warfare behind French Union lines had already weighted the scales of war heavily in favor of the VPA before Dien Bien Phu, and even before the development of the Navarre Plan.

It but remains to attempt to draw some general conclusions from the way the Communist Vietminh fought its war against the French in Indochina. From the overall point of view, the VPA command has not evolved any particular tactical formula that had not already been field-tested by the Chinese Communists in their fight against the Chinese Nationalist forces of Generalissimo Chiang Kai-shek.³

However, they have successfully adapted those general principles to local conditions and have made best use of their basic weakness in heavy equipment by simply transferring the entire war to a level of fighting which largely nullified the French weapons monopoly in the field of aviation or armor. The danger of the West's simply "pricing" itself out of the field of conventional warfare by an overreliance upon superweapons must be faced and met today from Korea to Indochina, and from Egypt to Algeria. Experience shows that a series of brush fires is harder to combat than one single major blaze—and one may be just as deadly as the other.

³ Lieutenant Colonel Robert B. Rigg, "Red Parallel: The Tactics of Ho and Mao," *The Army Combat Forces Journal*, January 1955.

In Indochina, the French made a 3 July 1953 Declaration of Independence for the Associated States of Cambodia, Laos, and Vietnam. Today, these states and the French are taking practical steps to make that independence a reality. The United States rejoices at this development. At the same time, we have pointed out to the leaders of the Associated States that they could scarcely hope to preserve their independence in isolation. Economically, politically, militarily, they would, at first, be weak and dangerously exposed. The French Union, like the British Commonwealth, could be a framework within which independence and interdependence can find voluntary expression.

Secretary of State John Foster Dulles

WHAT IS A CORPS?

Lieutenant Colonel Jacob L. Riley, Jr., *Infantry*
Army Section, Military Assistance Advisory Group, Vietnam

This article is in consonance with instruction at the Command and General Staff College.—The Editor.

SPECIAL Regulations 320-5-1, *Dictionary of United States Army Terms*, says a corps is "a tactical unit larger than a division and smaller than an army."

This definition certainly appears to be facetious. Actually, however, it embodies the keynote of the corps of today—flexibility. This often overworked word is exemplified in the organization of the corps. The *Encyclopedia Britannica* states that "corps" is a French word which has been in general use since the seventeenth century to denote a body of troops, varying from a few hundred to the greater part of an army.

Origin

In the latter part of the eighteenth century, French Marshal DeBroglie initiated the "mutually supporting divisional system of organization—two or more divisions being integrated into a corps." It was in 1800 that French Marshal Moreau, in planning his invasion of south Germany, grouped his divisions into "two Wings and a Centre" which he placed under three senior generals, while retaining a reserve of four divisions "under his own hand." In 1805 Napoleon, seeing this system of organization desirable for large armies and finding himself with more infantry divisions than it was convenient to command or direct, introduced a permanent organization called the *corps d'armée*. This organization helped form the famous *la Grande Armée* which overcame

Austria, Prussia, and Russia in three great wars during the succeeding 3 years. It also formed the model of organization for the later armies of France and eventually for those of all the great powers of Europe.

The term *corps d'armée* was borrowed by the Prussians for their *Armee Korps*, and the United States until recently called their organization an army corps. Now, however, the "army" has been dropped and we know it simply as the "corps."

In the early nineteenth century, when the United States adopted the corps organization, each corps was familiarly known by the name of its commander, that is, *Green's Corps*. The corps were numbered according to the rank of their original commanders.

President Abraham Lincoln was so convinced with the necessity of this type organization that in March 1862, without consulting the then General in Chief, Major General George B. McClellan, he ordered the Federal Army formed into four corps.

Today's need for an intermediary headquarters between divisions and the field army is basically the same need that has existed since the *corps d'armée* first came into being. The field army commander needs assistance in controlling and supervising his combat elements. In dealing with a field army of up to 12 divisions or more, it is beyond the span of control of one headquarters to direct the combat operations of so many major subordinate units.

As a point of departure in considering our United States corps, let us take a "type" corps whose organization is shown in Figure 1.

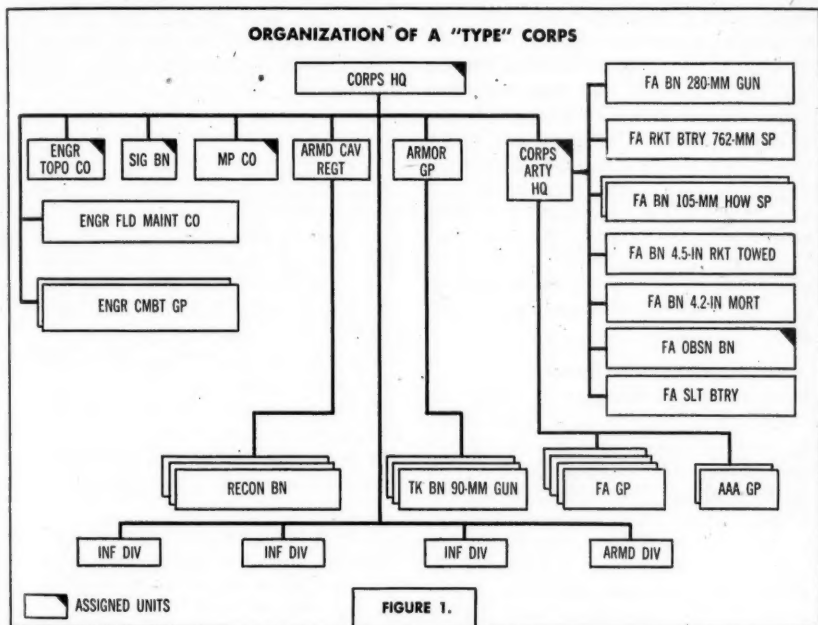
The United States corps is divided into three main subdivisions:

1. Assigned corps troops, which include those nondivisional units *permanently* associated with the corps.

2. Attached corps troops, those nondivi-

tables of organization and equipment (TOE), these units number approximately 2,800 in aggregate strength.

When compared with the over-all strength, roughly 100,000, of a type corps, it can be seen what a small portion of the



sional units *temporarily* a part of the corps.

3. The attached divisions.

Those relatively few corps troops assigned to a corps are principally for control purposes and are, therefore, always

total figure these assigned units comprise. What, then, determines the number and composition of these attached troops that comprise about 95 percent of a corps? The field army commander will decide that, based upon the mission he assigns the

The corps is a tactical unit possessing great flexibility. Today's need for an intermediary headquarters between divisions and the field army is basically the same that has existed since the corps came into being

needed regardless of the number of divisions or corps troops that may be attached. Assigned corps troops are those units so designated in Figure 1. Under present

corps and the situation which faces it. The corps will consist of from 2 to 6 divisions, plus other combat and combat support units of less than division size.

As an example, when the Seventh Army made its first appearance in World War II as the American fighting force in Sicily, its commander, then Lieutenant General George S. Patton, Jr., formed a provisional corps, and it was so officially designated. Initially, this provisional corps had only two divisions, the 3d Infantry Division and the 82d Airborne Division. Later the 2d Armored Division was attached. From 15 July 1943, D plus 4 on Sicily, until the end of the Sicilian Campaign on 17 August, this corps fought as a full-fledged blood brother of the other corps of Seventh Army. The necessary command and headquarters personnel were drawn from Seventh Army. The commander of the provisional corps was Major General Geoffrey Keyes, General Patton's deputy army commander.

Great Flexibility

Veterans of all theaters of operations in World War II will recall the facility with which divisions were moved between corps during some campaigns. This was even true in some operations in the Pacific area where corps headquarters were few and operations were varied. Where every effort was made to capitalize on the slightest advantage or indication of success, divisions sometimes were shifted from one corps to another with lightning speed and without warning.

The important point here, however, is that while a division commander might not know from day to day under which corps he would be tomorrow, he could be

sure he would be able to pursue his mission with complete unity of command provided at the higher level.

To exemplify the extent to which a corps may often be expanded, we find that on several occasions in the Normandy Campaign, both the VII and VIII Corps operated with six divisions attached. This flexibility of organization is ideal for meeting varying combat conditions.

Role in Battle

Looking over Figure 1, one notes a lack of service troops. The reason lies in the role of the corps on the battlefield. It is a tactical unit of execution and maneuver through which the army commander fights the battle. Insofar as administrative support is concerned, the corps looks to field army to take care of its needs. The corps controls service units only when the field army cannot exercise adequate control. For example, an *independent* corps becomes a self-contained unit, similar to the field army, and must operate the supply and service installations necessary for its administrative support.

Unless his corps is an independent unit, however, the corps commander will assert influence upon the administrative support system only when it has a direct impact upon tactical operations of the corps. In this manner the corps is left relatively unencumbered with administrative details, and can thus turn its full attention to tactical operations.

An illustrious British Army officer, Lieutenant General Sir Dudley Ward, established the proper perspective when he said of a corps:

It is a war headquarters, it is not really a peace headquarters. . . . The real object of the thing is that men shall fight, and that men shall fight under the best possible fighting conditions.

In order to assist in accomplishing this, let us examine the major corps troop units

Lieutenant Colonel Jacob L. Riley, Jr., graduated from West Virginia University in 1938. During World War II he served in the Southwest Pacific area with the 21st Regiment, 24th Infantry Division. From 1950 to 1953 he was assigned to the Seventh Army and 2d Armored Division. Following his graduation from the Regular Course of the Command and General Staff College in 1954, he became a member of the faculty of the College. He is now with the Army Section, Military Assistance Advisory Group, Vietnam.

and see how they are employed by the corps commander.

Corps Engineers

The engineer combat groups shown in Figure 1 are organized as indicated in Figure 2.

The primary combat mission of the corps engineer units is no different than that of other combat engineers, which is to increase the combat power of the corps by construction or destruction, emphasizing that which facilitates the movement of friendly troops and/or impedes that of the enemy. In accomplishing this mission it is desirable, whenever practicable, to retain the engineers under the centralized control of corps, rather than attach them to other subordinate units. Note that the typical corps engineer group has combat battalions, and bridging and construction units which lend much needed assistance throughout the corps zone. These units are placed in support of divisions or other major subordinate units of the corps as the need arises. This provides for more efficient employment from the corps standpoint and gives corps added flexibility in their use.

The engineer topographic company provides map information by preparing sketches, drawings, maps, and map substitutes; by reproducing existing maps; and by distributing maps from all sources. It will usually be kept under corps control.

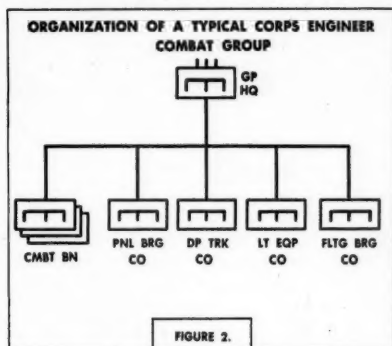
The engineer field maintenance company performs field maintenance on engineer equipment of the type corps. Like the topographic company it usually functions directly under the corps engineer.

There will be times, of course, when it will be advisable to attach engineer units to another unit. For example, a division engaged in a certain type of deliberate river crossing, a pursuit operation, or when performing independently of the corps would find it necessary to have control of corps engineers working with them.

Signal

The corps signal battalion is the unit that provides the nerve center of the corps—the communications within the headquarters and to the units operating directly under corps headquarters. This battalion also has the mission of providing signal field maintenance, limited supply, and photography support to the assigned corps troops only.

Units attached to corps must furnish signal supply and service support themselves or depend upon the field army units and installations. The signal battalion, it will be noted from Figure 1, is one of those few assigned corps troop units which



remains permanently with the corps, there always being a need for the headquarters to communicate regardless of its mission and size.

Military Police

The military police company is another assigned unit and performs the usual Military Police functions for the corps. This company's operations are normally conducted in the corps rear area. The divisions have little need for their assistance because each division has an organic military police company of its own. Criminal investigation activities within the corps area are performed by the army criminal investigation team supporting the corps.

Armored Cavalry Regiment

The primary role of the armored cavalry regiment is to engage in security, reconnaissance, and light combat missions. This regiment is highly mobile and lightly ar-

balanced firepower, excellent mobility, and extensive communications, is a good nucleus about which a highly mobile combined-arms team or task force may be organized. Motorized infantry, self-pro-



The T43, M48, M47, or M41 which are shown above might be found in the armor group.

mored; these characteristics primarily determine its combat role.

It is the principal ground reconnaissance force of the corps commander, and is an extremely versatile unit. The corps frequently employs the regiment as an advance, flank, or rear security force. Such a covering force role includes performing both security and reconnaissance. Usually the covering force operates under the control of the corps commander. All or a part of the regiment, however, may be attached to an armored or infantry division as required in order to ensure unity of command in performance of a common mission.

This organization, by virtue of its heavy,

pelled artillery, engineers, and additional tanks might be considered for attachment in such event.

Armor Group

The armor group may have a variable number of tank battalions attached to it. For our type corps, notice that we indicate in Figure 1 an armor group of three 90-mm gun tank battalions. As the occasion demands, specialized armored units such as flamethrower tanks or mine exploding tanks may be attached to the group.

These nondivisional medium tank battalions are employed by the corps commander as follows:

1. Attached to an armored or infantry division for a specific mission.

2. To replace, in either the infantry or armored division, a tank battalion that has been made ineffective as a result of mass destruction weapons.

3. Attached to the corps armored cavalry regiment when the regiment is organized as a special armored task force.

4. All or a portion of the group retained under corps control as corps reserve.

The armor group may on occasions be employed as a unit under corps control for short periods of time, rather than be attached to another unit. Such employment is rare, however, since the group must then be reinforced with infantry, artillery, and engineers to be effective. More often than not we find the battalions of this armor group attached to infantry or armored divisions of the corps.

The commander of the armor group is the corps armor officer and as such heads up the armor section of corps headquarters. This makes him both a commander and special staff officer which is also true of the corps artillery commander.

Corps Field Artillery

It is at the corps level that advantage is taken of the tremendous combat power that exists within the wide range of weapons which our artillery possesses today.

Indicated in Figure 1 are some of those weapons by type and caliber. The ones not shown are in the battalions within the field artillery groups. Remembering again that we represent here a "type" corps artillery, the four field artillery groups include battalions equipped with the 155-mm howitzer, 155-mm gun, 8-inch howitzer, or the 240-mm howitzer.

Corps field artillery runs the gamut in size—from the 4.2-inch mortar battalion, recently designated an artillery unit instead of infantry, to the *Honest John* rocket battery, equipped with the 762-mm rocket. The corps field artillery must be

emplaced so the bulk of its fires can be massed on critical localities. For example, this means "weighting the main attack" in an offensive situation or in a defensive action, so locating the corps artillery that the enemy's attacks are met with a mass of fire.

To render maximum effective support to the corps tactical operations, we find the corps field artillery distributed generally across the corps zone or sector and engaged in such missions as general support of the corps, reinforcing the fires of specific divisional artillery, or a combination of these two missions. With the exception of the battalions armed with the shorter range weapons like the 105-mm howitzer, the 4.2-inch mortar and the 4.5-inch rocket, corps artillery units remain under the centralized control of the corps artillery commander and are usually not attached to subordinate units. Battalions equipped with the short-range weapons mentioned here are usually attached to the division or other subordinate units for a specific operation. Of course, any portion of corps field artillery may be attached to subordinate units when required, but it is preferable to retain the bulk of these units under corps artillery control when practicable. The added flexibility of being able to shift and/or mass fires at the corps level is a great advantage.

The field artillery observation battalion possesses the necessary survey, flash ranging, sound ranging, radar ranging, and meteorological equipment and personnel to furnish this type of support to the field artillery units of the corps, which includes locating hostile artillery, registering and adjusting fires of friendly artillery, conducting and coordinating corps artillery survey operations, and providing meteorological data to artillery units. The battalion operates more efficiently under centralized control and, therefore, is usually assigned the tactical mission of general support. When centralized con-

trol is not feasible, the batteries may be attached to divisions or task forces.

The 280-mm gun, a long-range field artillery weapon possessing considerable mobility, is capable of neutralizing and destroying targets over a wide area by accurately delivering atomic as well as high-explosive projectiles. Normally, these very heavy cannon units are assigned a mission of general support of the corps and emplaced beyond the range of the enemy's light and medium artillery. Individual batteries may be attached to task forces of division strength or greater. The 280-mm gun as an exception to the general rule may, as a security measure, be held in reserve until such time as the attack of a suitable target can be achieved with maximum surprise. The extensive capabilities of this weapon make it a lucrative target for enemy air and counter-battery effort. Decision for its use must include consideration of the provision of adequate protective and security means.

The 762-mm rocket battery is capable of delivering a variety of warheads at long ranges under varying weather conditions. This battery is normally assigned a general support or a modified general support mission. Corps may either retain the battery under corps artillery control or attach it to an artillery group or an artillery battalion, such as the 280-mm gun or 240-mm howitzer battalion.

Corps Antiaircraft Artillery

Of the two antiaircraft artillery groups depicted in Figure 1, one is called the "automatic weapons" group and the second, the "gun" group. The automatic weapons group is primarily equipped with 40-mm guns and 50-caliber machineguns. To this group falls the lot of engaging relatively low-flying aircraft. The gun group, possessing 75-mm and 90-mm guns, is more concerned with the high-flying enemy planes.

While the corps artillery commander is

responsible for the over-all employment of corps antiaircraft artillery units, he normally assigns the mission of coordinating the antiaircraft defense of the corps zone to the senior, or otherwise designated antiaircraft artillery group commander. Antiaircraft artillery units usually are employed to protect corps field artillery, corps reserves, bridges and crossing sites, and other critical installations and localities within the corps area.

The antiaircraft artillery weapons may be employed in a ground support role. Such use, however, is predicated on a careful consideration of the effect such employment will have on their air defense role and the relative importance of the two type missions.

In performing these missions the units are usually retained under corps artillery control. They may, however, be attached to divisions or other subordinate units as the situation requires.

Corps General Staff

Corps has the same five general staff sections that exist at other levels of command. Although general staff responsibilities and functions remain the same regardless of echelon, we find that certain differences will be present at corps, depending upon which of the three major subdivisions of a corps we are dealing with—assigned corps troops, attached corps troops, or attached divisions. Generally speaking, responsibilities of the general staff to *assigned* corps troops are the same as a division's general staff to the assigned units of that division.

In the G1 field, for example, corps does not enter into the operating procedure for replacements other than for assigned corps troops, *except* to recommend allocations and priorities based principally on coordination with corps G3. Collection or evacuation of prisoners of war, another G1 responsibility, is not usually performed by corps for the divisions. Evacuation of

selected individuals or categories of prisoners of war from divisions will be undertaken by corps, if desired, but the over-all responsibility for prisoner of war evacuation rests with the field army. The corps G1 is, as any corps general staff officer, charged with the responsibility of assisting subordinate units in the solution of problems within the fields of interest of that staff officer.

The corps G2 has the same functions as any other G2. Because of a larger area of operations, however, the corps G2 section has more personnel than its divisional counterpart. The counterintelligence branch of the corps G2 section, for example, is controlled by personnel assigned to the corps. This is not so at division, although at both levels the Counter Intelligence Corps detachment is attached, rather than assigned. Since corps normally interrogates only selected prisoners of war, we find that the corps G2 section has fewer attached interrogator teams than the division.

The principal difference in the operation of the corps G3 section, as compared to the division G3 section, is the extent to which it plans for future operations. At corps, plans must be made for the next one or two operations; at division, however, planning is usually concerned with the current operation. To quote again from General Ward of the British Army:

Remember, corps headquarters is doing its business best when it is thinking not less than 48 hours ahead. When the corps gets into the current battle, then put your tin hat on and look for trouble.

The corps G4 has full general staff responsibility for the logistical support of assigned corps troops only. He is a coordinator and expeditor of logistical support for the divisions and attached corps troops. Although not directly responsible for supply and service to all attached troops, this being an army job, the corps

G4 will determine supply requirements and recommend allocation and priorities of items in short supply, as well as any reallocation of service support necessary to ensure accomplishment of the corps mission.

The corps G5 section is manned by an augmentation detachment. Like all G5's, his is the general staff responsibility to see that civil activities do not interfere with tactical operations, at the same time ensuring just and reasonable treatment to the inhabitants of occupied areas; and lastly, to induce a maximum contribution by the civil economy to the military effort.

Conclusion

To summarize, the corps is a tactical unit of varying size and possessing great flexibility. Its presence in our organization is due to the need of the field army commander for an intermediary headquarters to assist in the control and supervision of the combat elements. The nondivisional units known as corps troops are a source of tremendous, flexible combat power with which the corps commander can influence the action. The administrative responsibilities of the corps general staff vary with respect to each of the three major subdivisions of a corps—the assigned corps troops, attached corps troops, and the attached divisions.

General Matthew B. Ridgway stated recently:

The role of the corps in the chain of command has never been fully appreciated. The corps commander is the highest commander in the military hierarchy who has only a tactical responsibility. The division commander has a greater logistical responsibility. The concerns of the army commander are primarily logistical and territorial. The corps commander is almost exclusively concerned with battle tactics, and above all he must be a fighter, a battle leader.

The Medical Service of the Field Army and Atomic Warfare

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Faculty, Command and General Staff College

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE trend of development and perfection of weapons employing nuclear energy has made quite clear the fact that these are essentially casualty-producing agents. As such, they are naturally of great interest to the military surgeon. At the present time the latter has two major responsibilities in this regard. First, he must be sure that the tactician is aware of the extent and nature of medical problems to be anticipated in the implementation of a given plan, and second, he must be prepared to cope with these medical problems. This article is an attempt to develop a basic approach to the latter responsibility.

The most difficult aspect of a discussion involving "tactical atomic warfare" is the visualization of the battlefield situation. One may have a mental picture of the havoc resulting from the detonation of a high-yield weapon over a busy military port complex such as we knew in World War II. On the other hand, it is possible to conceive of the other extreme—an explosion which injures so few people that current organic medical facilities will be adequate. Many factors could contribute to this reduced effect. Doctrine stresses dispersion and passive protection which, if practiced, should materially reduce casualties.

The avoidance of built-up areas for installation sites should appreciably reduce the number of injured from secondary missiles. The remaining patients, those with burns and ionizing radiation effects, do not pose the immediate requirement for aid that the wounded do. They are, in general, better able to move and care for themselves in the initial period after injury. In the light of this inability to conjure up a clear picture of the magnitude of effect of the employment of "tactical atomic warfare," an assumption must be made. Within the limits of this discussion, it is adequate to assume, as a minimum, that in the field army area this form of warfare frequently will produce an immediate concentration of patients of a magnitude far beyond those encountered in World War II or in Korea. Further, these concentrations of patients cannot be looked upon as "disasters" in the accepted sense of the term, but as normal occurrences, for one may follow upon another at close intervals for extended periods. It is also relevant to assume that the medical requirement posed by the sick and by those wounded by "conventional" high-explosive missiles will not be less than that encountered in World War II or in Korea.

In examining a system for the provision of evacuation and hospitalization in the field, it is first necessary to have clearly in mind the mission of the Army Medical Service of which the system is a part. This is basically the conservation of military manpower which is accomplished through application of the following principles:

1. Return the maximum number of sick, wounded, and injured personnel to duty.

2. Return them to duty as soon as possible through:

a. Effective treatment methods.

b. Effective sorting (triage), treatment as close to their origin as is feasible, distance being here considered in terms of time elapsing between discharge from medical facility and return to organization.

3. Return them to duty in optimum physical and psychological condition.

While these principles are applicable to the sick, who pose a constant and sizable demand on the medical service, we shall subsequently confine our discussion to the wounded and injured.

What are the basic activities which must be provided for in the system? Depending upon the nature and extent of trauma, and regardless of other circumstances, an injured man may require one or more of the following procedures to restore him to maximum efficiency. These procedures are interrelated; for example, resuscitation may be useless without further procedures of a corrective nature.

1. No action.

2. Resuscitation (treatment of shock).

3. Essential surgery (procedures varying from dressing and splinting to ligation of major vessels).

4. Definitive surgery, which may be further considered, on the basis of urgency,

tween injury and the institution of the necessary surgical treatment. The patient's position in relation to a medical facility must always be considered in terms of this factor (evacuation hours) rather than distance per se.

The application of the above five procedures may be demonstrated best by means of a few nonmilitary examples.

Let us assume a small town having one hospital staffed by one surgeon. A pedestrian is struck by an automobile. A well-trained Boy Scout, soon on the scene, realizes that the following three actions must be taken:

1. First aid and/or preparation for movement to the hospital.

2. Movement to the hospital.

3. Definitive treatment at the hospital.

In a second situation, five people are injured in an automobile accident. Again the Boy Scout is present. Here the problem of allocation of means arises, and the actions to be taken become:

1. Establish *priority* for application of first aid and/or preparation for movement to the hospital.

2. First aid.

3. Establish *priority* for movement.

4. Movement.

5. Establish *priority* for definitive treatment.

6. Definitive treatment.

In a final situation, five automobile accidents occur simultaneously at different

The medical service should be increased in proportion to the need for the conservation of manpower. The only alternative is the reduction of standards of care which will mean fewer soldiers returned to duty

in two rough categories: emergency and delayed.

5. Interposed is the need for movement of the patient (evacuation).

It is necessary to understand that the omnipresent factor is time—the optimum time which can be permitted to elapse be-

points outside the town. Each results in five injured persons. First aid is again available at each site. Now a new factor is introduced—the inadequacy of the original hospital which requires consideration of those in other towns. Under these circumstances the required actions become:

1. Establishment of priority for first aid at each site.
2. First aid.
3. Establishment of priority for movement from each site.
4. *Selection of hospital of destination* to ensure effective treatment according to the need of the individual patient.
5. Movement.
6. Establishment of priority for definitive treatment.
7. Definitive treatment.

Field Army Medical Service

In order to provide the wounded or injured soldier with the elements of care noted above, there exists today an extensive organization within the field army. Ubiquity is a basic characteristic of this organization. It is represented wherever an appreciable number of soldiers are stationed. A second characteristic of the field army medical service is the continuous nature of its operations. Regardless of the extent of activity of the troops supported, there is a constant requirement for medical service. It is the wide and rapid fluctuation in extent of this activity, however, which dictates the inherent flexibility of the system. This flexibility assumes an importance rarely attached to that of other supporting services because of the urgency of the need for treatment of wounded men.

The medical service of the field army

Colonel Henry S. Parker is a graduate of George Washington University School of Medicine. He served as unit surgeon with cavalry and armored divisions prior to going overseas in World War II with the Surgeon's Office, Ninth Army. After the war he continued training in internal medicine at Walter Reed Hospital. He returned to staff duty in 1951 with the Operations Branch of USAREUR Medical Division. He graduated from the Regular Course of the Command and General Staff College in 1954 and subsequently was assigned to his present position on the faculty of the College as Army Medical Service Representative.

may be viewed functionally as a radial organization—with company aid men at the periphery and the evacuation hospitals at the center. The radii extend to every soldier, even though the intervening echelons of treatment and evacuation may vary. These echelons may vary from none, in the case of a man hit by a vehicle in front of the evacuation hospital, to those involved in handling a soldier wounded at a point 8 evacuation hours distant from the hospital.

In planning the extent and disposition of elements to be provided on one of these radii of medical service, certain basic factors must be considered. These are: rate of input of patients; extent of treatment required by components of the patient population; selectivity; and evacuation distance between points of input and definitive treatment.

The *rate of input* has a direct bearing on the numbers of medical personnel required, and the organization required to ensure maximum efficiency from the standpoint of both treatment and evacuation.

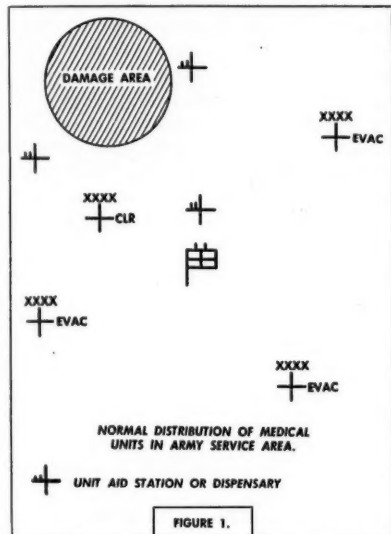
The *extent of treatment* required by components of the patient population should determine the quality of facilities provided, the disposition of facilities with regard to evacuation time from point of injury, and the requirement for evacuation means.

The need for *selectivity* depends upon the relative value of the patient population. For example, combat personnel are always urgently needed, and for this reason division patients must be carefully screened to permit maximum early return to duty. Selectivity is also necessary when medical means are limited to ensure efficient utilization of these means. This factor is the basis for determining:

1. The extent and disposition of sorting facilities.
2. The degree of control of evacuation (distribution of patients).

The *evacuation distance* from point of injury to point of definitive care has a bearing on the mode of transportation utilized and the need for, and disposition of, intermediate holding and treatment facilities.

It may be readily seen that, within a



given area, evacuation means and treatment means are complementary. A deficiency in one poses an increased requirement for the other.

Where *numbers* of patients are introduced, and an urgency, resulting either from the state of the patient or environmental factors, is also present, certain specific actions may be required. As has been previously noted, these are:

1. Evaluation of the patient from the standpoint of:

- a. Urgency of need for treatment.
- b. Nature of treatment needed.

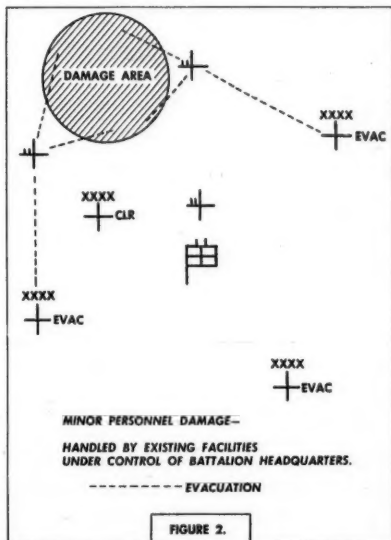
2. Assignment of priorities for each patient, based upon previous evaluation, to include:

- a. Priority for treatment.

- b. Designation of facility at which treatment is to be rendered.

The extent to which these functions are required is proportional to the ratio of the medical requirement to the medical capability. It should be pointed out that this capability must be examined at each echelon. For example, 500 empty beds and the requisite surgical facilities in the communications zone are of no value to patients in the army service area when evacuation means are lacking. On the other hand, the requirement for forward surgery is lessened when fast, *dependable* means of evacuation to distant surgical facilities are present.

Now let us come closer to the problem



at hand. The "type" organization of the medical service in the field army is based largely upon the division medical service, a pool of hospitals controlled directly by the surgeon, and numerous elements organized into three medical groups.

Each medical group in support of a corps has three major responsibilities:

1. Provision of "division type" medical service for corps troops.

2. Provision of "division type" medical service for army troops, in its segment of the army service area.

3. Evacuation of all clearing stations to army hospitals and movement of patients between hospitals.

As a rule the group has one battalion

2. The rapidity of production of these patients.

3. Distribution of patient populations.

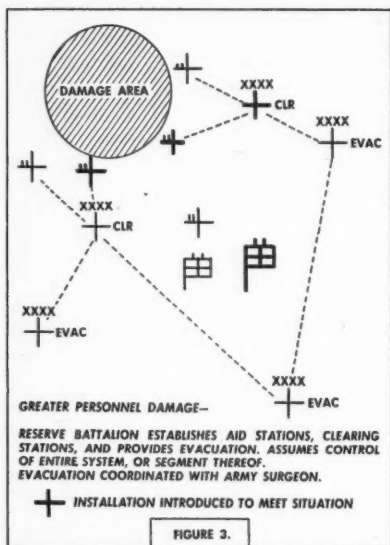
Increased numbers of wounded can be handled in one of two ways: first, where medical means are limited, by simply decreasing the extent of care afforded each patient, and second, by increasing the capability of the medical service.

With regard to the atom bomb, it is the rapidity of production of a great number of patients which produces the urgency of the requirement for medical support. Delay in clearing rubble from a bombed area, or in evacuating and repairing matériel, is not attended by the extent of loss resulting from delay in providing medical service. The *rapidity of production* of large numbers of patients requires reserve elements in the medical service. It is not enough to make initial provision for such a reserve. The concept of operation must include reestablishment of such a reserve as soon as possible after it is committed. Coupled with the need to anticipate repeated requirements for this reserve is the fact that the capability of medical facilities expanded on an emergency basis deteriorates rapidly after approximately 72 hours. This requires that the communications zone be capable of relieving the field army of its excess patients within a few days. The reserve in the army medical service should be acquired through:

1. A reserve capacity of each element of the medical service, to cover the period of peak load during which readjustment of operations is being made.

2. The existence of elements of the medical service which are in a reserve status or at least readily diverted from their current mission without the disruption of normal medical service.

The improved flexibility and effectiveness of atomic weapon delivery systems requires that the Army Surgeon anticipate the sudden appearance of groups of wounded at *any populated site in the army*



organized to carry out each of these functions.

It may be seen then that the field army medical service is a flexible organization designed to extend its functions into all parts of the combat zone. In the discussion which follows it will be apparent that "tactical atomic warfare" poses no new problem to this service. To repeat a familiar phrase, the problems differ only in "scope and magnitude."

Effect of Atomic Warfare

The tactical employment of atomic weapons emphasizes three facets of an old problem.

1. Numbers of wounded and injured.

area. The probability of occurrence of a medical requirement may well increase in proportion to the distance of the population from the main line of resistance. Troop safety requirements should deter the enemy from using a high-yield weapon on forward elements.

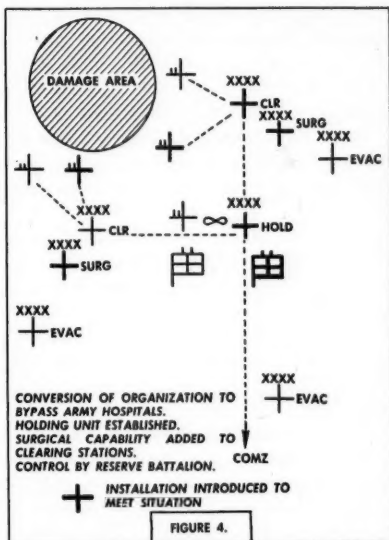
In spite of dispersion and other passive defense measures, rear area logistical installations still may constitute remunerative targets for enemy weapons. The attractiveness of these installations increases in proportion to the size of the element they support. Thus planning attention should be focused on corps and army service areas and the communications zone. In the past these areas have *not* been completely provided with the closely integrated and flexible field medical organization found in the division.

Solution

To return to the first facet of the problem, which is increased numbers of patients, it is apparent that an intermediate solution must be adopted. Manpower is our most critical resource, and its importance continues to increase. As the primary factor in the conservation of manpower, the medical service should be increased in proportion to the need for this conservation. A relatively small increase in the resources of the field medical service in atomic warfare can result in a hundredfold saving of lives and retention of combat effectiveness. If the desire to increase the combat to service troop ratio denies this augmentation of the medical service, the only alternative is the reduction of standards of care in situations of stress. This reduction of standards will materially reduce the percentage of patients returned to duty, but it is the price which must be paid for such a decision.

With regard to the rapidity of appearance of large numbers of patients, two solutions are apparent. First, operating installations of the medical organization

must at all times attempt to retain a reserve of service and facilities which will permit them to absorb the initial input of patients with a minimum disruption of function. Second, certain services must be held in reserve so that they may be committed rapidly to any area in which required. These must be *reserves* in the true



sense of the word. To levy on a busy evacuation hospital a requirement for mobile surgical teams for damage control is to substantially reduce its capability. This hospital, *as such*, is an integral part of the medical support provided by the field army when large numbers of wounded are generated by the detonation of a bomb. It will ultimately receive its share of these patients. To extract teams from it at this time is to "rob Peter to pay Paul."

The wide distribution of possible patient populations requires attention to the spatial design of the medical organization. Unit medical detachments will of necessity be near their units. Area dis-

pensaries provided by army must be in the vicinity of troop populations. Army clearing stations and evacuation hospitals should, on the other hand, be carefully located, with respect to evacuation means, in such a manner as to provide a "network" coverage of the area.

As a flexible reserve force, it is proposed that something on the order of two separate medical battalions be provided. These battalions should be organized to perform one or more of the following functions where and for the period required:

1. Augmentation of existing medical facilities.
2. Augmentation of existing control agencies.
3. Establishment of facilities as and where required, to include aid stations, clearing stations and holding units, and provision of evacuation means.
4. Establishment and operation of a complete treatment and evacuation system to the point of hospitalization or evacuation from field army.

The control of these battalions is best retained by the Army Surgeon. Under some circumstances they might be profitably attached to subordinate commands; however, it must be kept in mind that the field army medical service is an integrated system. Forward echelons are characteristically dependent upon those to the rear. To obtain maximum flexibility in the use of evacuation and hospitalization means, the authority to allocate these means must be centralized. Each patient recovered at the site of injury is a potential candidate for an evacuation hospital or for evacuation from the combat zone. His ultimate recovery may well depend upon the speed and accuracy with which his evacuation is directed to the point of ultimate treatment. It is not enough to provide emergency care on the spot, nor is the job done when the patient is loaded into a helicopter. Sufficient coordination and planning must be accomplished to ensure his

delivery to that hospital which is best able to care for him, whether it be in the combat zone, communications zone, or the Zone of Interior. Thus regardless of the medical means which can be made available at the site of injury, the control and coordinating functions of the field army surgeon can rarely be dispensed with.

The headquarters and subordinate units should be located with reference to the disposition of most vulnerable areas, and appropriate units included in damage control plans. The interim or "normal" employment of elements of the battalion should be limited to augmentation missions which permit the retention of unit integrity and ability to respond rapidly to movement orders.

As the medical requirement begins to exceed the capability of the field army, the latter must resort to two measures: first, the utilization of nonmedical personnel for the initial recovery and evacuation of patients to the first medical installation, and second, the evacuation of an increasing portion of transportable patients to the communications zone. These measures have far-reaching effects on combat effectiveness which must be anticipated and accepted.

The results of employing nonmedical personnel for the evacuation of wounded were very aptly described by a British military surgeon, Dr. Robert Jackson, in 1845. He said, in pleading for an adequate organic medical service:

It is dangerous to leave the office of removing the wounded from under fire to the care of their comrades. The eye of the soldier, while in action, is supposed to be directed to a point in front; and it is important that it be constantly directed to that point, and steadily fixed on it. It is, therefore, wise, even necessary, to preclude the operation of every cause which can furnish a pretext of giving it a lateral direction. The feeling of humanity, which

prompts the soldier to give assistance to a comrade or officer who is wounded, as it gives a colorable pretext for turning the face from the enemy, commences retrograde, and retrograde commences fear, which, once it makes impression, is difficultly staid from going on. One firelock is withdrawn from the line by the wound of the soldier, another by the impulse of humanity, and a third perhaps by the infection of example. This may happen; and if it does happen, the battle may be lost by the operation of causes which might, and which ought to have been precluded.

It is not difficult to transfer these thoughts from the rifleman under fire to the soldier performing a logistical mission in the army service area.

The inability of the field army to hospitalize any but nontransportable patients in its area compounds its loss of effectiveness. Where the army has the capability of hospitalizing "short-term" patients, it can ensure the rapid return to duty, to their original organizations, of these men. The soldier is most effective when fighting in the organization with which he has identified himself. The farther to the rear the patient must be evacuated, the longer it takes to return him to the front, and once in the communications zone, the less

the likelihood of his rejoining his own unit. If the combat effectiveness of a division is to be maintained under these circumstances, the replacement system must compensate not only for the increased loss of man-days but for the excessive loss of combatwise personnel.

Summary

In summary, it is proposed that the medical service of the field army in "tactical atomic warfare" be considered with the following points in mind:

1. The organization of the field army medical service is basically designed to provide care for widely fluctuating numbers of patients throughout the field army area.

2. "Tactical atomic warfare" requires that even greater flexibility of this organization be attained through:

- a. Provision of reserve elements.
- b. Reorientation of the spatial disposition of medical facilities in the corps and army service area.
- c. Greater flexibility of evacuation policy to permit early recovery of reserve means once committed.

3. The effective function of the field army medical service in "tactical atomic warfare" is to a tremendous extent dependent upon the capability of that of the communications zone.

No matter what kind of a war we might have to fight and no matter what might happen in its early phases, you can be certain that the major combat burden would fall upon our ground troops and the ultimate decision would be obtained by soldiers on the ground. As long as man lives on the land, and depends upon the land for his sustenance, final victory in any conflict will be on the ground.

Secretary of the Army Wilber M. Brucker

AMERICAN LEADERSHIP IN MILITARY DEVELOPMENT

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

AMERICANS have devoted much of their time and talent to the creation of a well-rounded and awesome military potential. Especially in recent years the United States has concentrated on the creation and development of superweapons, in particular the fission weapon or atom bomb, and the fusion or thermonuclear weapon, commonly known as the hydrogen bomb. The present arms race has not dismissed the importance of conventional weapons, for now, as in the past, strenuous efforts are being made to improve the quality and capacities of such weapons.

Imagination is appalled by the capabilities of the new weapons. The human mind can scarcely grasp the enormity of their destructive powers. Simply stated, the area of mortal danger is extremely vast, for these are obliterating weapons of massive power. With them, even if employed in rather limited quantity, all human life can be destroyed.

The difference in terms of destructive-ness is stated in terms of kilo or 1,000 tons of TNT equivalent for fission weapons and in mega or million tons for fusion weapons.

Thermonuclear weapons are, in fact, a

new kind of weapon with a new kind of power capable not only of destroying all life within a very broad range—as large as the state of Maryland, for example, with one bomb, but also of supplying adverse radioactive effect on human genetics among those fortunate, or unfortunate, enough to be counted as survivors.

"Family of Weapons"

The superweapons are referred to as a "family of weapons." They differ as to form, as to the type of energy used, and in size. Thus they can be adapted to different purposes.

Such diversification calls for the establishment of policy as to occasions for use, and also highlights the need for means to effect delivery of the weapon. It also calls for direct contact between United States scientists who have produced and who are now producing the new weapons, the military establishments which may be called upon to deliver them, and the highest formulators of public policy.

The need for smooth and continued direct contact between the scientist and the military man, based on cooperation rather than command, and without the sterility of impeding security procedures, has been much discussed. Without such amicable and cooperative contact there is a continuing fear that the potentialities of some weapons may be ignored, the potentialities of other weapons exaggerated, and general

misapprehensions as to respective responsibilities.

Few persons now doubt that both the United States and the Soviet Union possess varying quantities and types of superweapons and methods of delivery. The British also possess the atom bomb, and have gone a considerable distance toward the development of their own hydrogen bomb.

A thermonuclear device was set off by the United States at Eniwetok Atoll in 1952. Although some well-informed persons once believed that it would be impossible for the Soviets to explode a thermonuclear weapon before 1957 or 1958, we are now aware that they were able to accomplish this objective in 1953, and were successful in exploding another in November 1955.

The Soviet's capability in superweapons emphasizes the fundamental fact that today the pure scientist and the technologist are major factors in any kind of military development. The quality of fundamental science, possibly even more than the state of technology, in any country will in large part determine the quality of weapons development, and will directly condition a nation's military strength.

No Monopoly

We in America, although entitled to be proud of the work of our scientists and of our technologists, should be thoroughly aware that the United States possesses no

top of the scientific and technical world, and their weapons research and development were unparalleled. Our free enterprise system and coordinated individual initiative had produced topnotch results. Thus it has come as a surprise to many to observe that a totalitarian system of government could engage in scientific inquiry and weapons research and development, and could bring its product to a stage so high as to challenge seriously the lead of the free countries. At the same time the Soviets also have whittled away the one-time American monopoly of production brains in defense industries.

Evaluation of respective positions is difficult, particularly for one who must depend upon public information for his evidence. However, in view of the herculean efforts of the Soviets to train scientists and technologists, particularly in the area of military research and weapons development, and because of the weapons which they now possess, it is probably neither wise nor safe to assume that any country has a very large lead over any other in the area of superweapons.

Reducing America's Mastery

Thus in a decade plus a few years, and not through espionage but rather through coordinated scientific achievement, the Soviets are slowly reducing America's exclusive mastery over superweapons to something which shortly, it may be pre-

If American leadership in weapons development continues favorably, and the deterrent theory is truly effective, the world will have sufficient time to realize that nuclear war is and will continue to be obsolete

monopoly in these areas of human endeavor. The British, Germans, Austrians, French, Italians, and the Soviets also have turned out talented and superior scientists and technologists.

At one time the United States and the free world were firmly entrenched at the

dicted, will closely resemble a stalemate. United States efforts to redress such a stalemate through the development of even more powerful weapons, in itself and taken alone, would seem to have little likelihood of advancing the national interest, for use of existing superweapons of the

thermonuclear variety already seems to spell codeath for all mortals. However, and despite this, the United States is obliged to perfect even more powerful superweapons and methods of delivery.

Let us not forget that mere possession of the superweapons has not been the sole concern of those who have the power to control events. United States military development has taken many other paths, and not all have been directed toward facilitating the creation and development of superweapons. Thus plans for the delivery of existing bombs have required the best efforts of our scientists, technologists, military personnel, and top policy formulators. Military development has been pursued with great skill, ingenuity, and devotion, often without public understanding and support, in such areas as: jet aircraft, both land and sea based; atomic-powered submarines; airbases within short flying time from target areas; rockets; earth satellites; electronic computers, such as UNIVAC (which are needed before precise weapons specifications can be determined); defensive techniques (including warning systems such as the Distant Early Warning Line, being nearest the polar regions, the McGill Line in central Canada, and the Pine Line along the American-Canadian boundary); and automatic communications systems; to say nothing of the mounting of an adequate

civil defense program and the development of a strong and flourishing scientific manpower pool. Conventional weapons have been much simplified and perfected in many ways.

Even though military bases are equipped with radar detection units and electromagnetic eyes, it is likely that at the present time offense has outdistanced defense. With science and technology at work, serious efforts are being made to reduce the imbalance.

Federal Expenditures

Throughout, it will be observed that if the United States will retain leadership in military development, she must secure the very best efforts of men of science and technology. Military research and weapons development recently have been regarded as a proper subject of large federal expenditures. Since 1953 the national government has budgeted each year over 2 billion dollars for research and development, and of these sums at least 85 percent has been devoted to military purposes. Large amounts also are being expended by industry for similar purposes. However, and by comparison, in 1944-45 the sum of \$2,629,000,000 was so budgeted, and the 1944-45 dollar had a larger purchasing power.

The Soviets have long made it a matter of official policy to insist on the development of a large scientific and technological working force. Stalin speaking before the Student Youth Organization (Komsomol) in 1928 said:

To master science, to forge new cadres of Bolsheviks—specialists in all branches of science, to study, study, study in the stubbornest fashion—that is the present task, a crusade of revolutionary youth into science—that comrades, is what we need now.

In the United States it has been suggested by the Engineering Manpower Commission of the Engineers Joint Council that

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industry alone needs 30,000 new engineers yearly, with that number enlarged to 40,000 in the event of a serious national emergency. American engineering schools graduated approximately 28,000 persons in 1952, 19,000 in 1953, and 17,000 in 1954. In comparison it has been estimated that the Soviet Union's 33 universities and 887 higher educational schools train natural scientists and technicians at the rate of about 100,000 a year, of whom approximately 50,000 are engineers. Recent figures disclose that between 1928 and 1954, 682,000 engineers were turned out in the Soviet Union, while at the same time but 480,000 were trained in the United States. During the same period the Soviets graduated 320,000 in the field of medicine while the United States graduated 148,000.

Shortages

Not only from the viewpoint of defense and weapons technology, but also because of the increased tempo of our industries, it appears that the shortage in the United States of pure scientists and technologists is not only serious but critical.

After pointing out that 60 percent of the Soviet graduates in 1954 were in the area of science, and at that same time only 8 percent of American graduates were in this area, Dr. Thomas H. Johnson, the Atomic Energy Commission's director of research has stated: "If this trend were to continue for long, it would mean that communism would gain military supremacy over democracy." Mr. Lewis L. Strauss of the Atomic Energy Commission has commented that we in America are in danger of losing the cold war in the classrooms.

The Future

What of the future? Clearly America will have to encourage the development of pure scientists and technologists and the maintenance of conditions favorable to freedom of inquiry in their respective competences. Especially is it mandatory that there be no sacrifice of men and women of

science as scapegoats by unscrupulous politicians because of differing scientific or political judgments. Measures designed to minimize thought control and to improve morale must be pursued affirmatively.

Further, while stressing research and development in offensive weapons, still even greater attention must be given to the development of effective defensive weapons and procedures. Retaliation, no matter how effective, is not enough, and this despite the fact that the United States has the capability of delivering a full-scale nuclear attack with hydrogen bombs upon short notice.

The paradox of military development in the world today is that things are so bad that they are somewhat better, for the superweapons can affect the decentralized and dispersed nation as adversely as the concentrated nation. This has led to the doctrine in the United States and allied states of nuclear deterrents to big wars. It has no application to small contests of force, typically referred to as the brush fire type of engagement.

Deterrent Theory

The deterrent theory has been described by Sir Winston Churchill, John von Neumann of the Atomic Energy Commission, General Curtis E. LeMay of the Strategic Air Command, and such scientists as Vannevar Bush, James Killian and A. G. Hill of the Massachusetts Institute of Technology, and others, and is standard doctrine of the Strategic Air Command. The theory is simple, namely, that no country can afford to launch an attack with nuclear weapons because retaliation would be comparatively instantaneous and too damaging. It has a corollary in the area of political alliances. Small states, confident of the military power of the senior member of the alliance, cannot readily be deterred from adhering to their engagements by threats of other nuclear powers. Meanwhile, military men of the free countries are constantly apprehensive lest mis-

takes or blunders unintentionally trigger off an aggressor attack, or, what is worse, only appear to be such an attack, which would make retaliation the sole alternative.

Conclusions

It appears that the United States has planned her weapons development with skill, and has assured the means for both nuclear and conventional warfare. While the potential of the Soviet Union has increased more rapidly than that of the United States since 1950, the American position is still one of superiority, albeit a diminishing one. Weapons are but the end product. Such questions as moral con-

siderations, superiority in scientific and technological manpower, sound organizational devices, an effective mobilization basis, and wealth in natural and economic resources would appear to be of greater import if the deterrent theory is to continue to be given a chance to prove that it can be effective.

If American leadership in weapons development continues favorably, and if the deterrent theory is truly effective, then the world will be provided with enough time to realize that nuclear war is and will continue to be obsolete. Strength in weapons will be obliged to prove that the alternatives, in the final analysis, are co-existence or codeath.

For several years, public attention has been monopolized by the dangers of an all-out thermonuclear war, even while we have been confronted by the fact of several nonatomic wars and the threat of several others. This preoccupation with a thermonuclear holocaust has somewhat clouded understanding of the tasks of the Army.

Our Armed Forces have to be ready to defend the interests of the United States under *two* conditions: all-out war with atomic and hydrogen weapons; and peripheral wars designed to nibble away one by one the non-Communist countries around the Communist borders, until the balance of space, people, and resources is heavily against us.

It becomes increasingly unlikely that any government will deliberately embark upon a course of action calculated to bring on a thermonuclear war, because it is more and more apparent that such a war would be a mutually suicidal action from which no true victor could emerge.

On the other hand, there are many inducements to the Communists to grab for undefended assets and resources around the fringes of their empire. There is increasing danger of these marginal aggressions eating away at the borders of the free world.

And when we examine the possible scenes of such aggressions, it is apparent that in most of them, if the United States becomes involved, the ground troops must bear the heaviest burden for the United States forces.

As to the all-out thermonuclear war, our major deterrent is certainly the Strategic Air Command and the sure knowledge that in such a war there can be no victory worth the price.

General Williston B. Palmer

EVOLUTIONARY CHANGES TO ARTILLERY TACTICS

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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE advent of the atomic era, and particularly the development of field artillery atomic delivery means rapidly responsive to the call of the tactical commanders, demands that our standard tactical concepts and organizations be examined to determine their adequacy to meet these changed conditions. Such analyses immediately reveal that certain changes are undoubtedly necessary if we are to retain the capability of staying on the battlefield with the enemy. These changes will not represent *radical departures* from current tactical and organizational concepts but rather will be the result of *evolution* to match technological advances which will occur from time to time during the coming years.

First, and foremost, greater dispersion of all elements on the battlefield is dictated. Second, atomic firepower brings to the combat zone an awesome fire support potential never heretofore used on a bat-

tlefield in ground combat. At the same time, it is considered to be merely an extension of our high explosive fire support capability and in that regard offers us a more lethal weapon than we presently possess. Next, flexibility of organization and maneuver to meet changing situations becomes a must in any atomic or nonatomic war in which we engage. Lastly, the artillery is fully cognizant of the fact that organization and tactics of the supported arms will provide the deciding factor as to what the artillery will be capable of accomplishing in any future war.

With these thoughts in mind, let us examine the role of artillery in combat and determine the over-all impact of atomic conflict on that role.

Basically, the mission of field artillery will be quite similar regardless of whether an atomic or nonatomic war is fought. Briefly, the artillery mission in either type war can be stated as follows:

Field artillery must possess the capability of delivering accurate and timely fires with appropriate caliber and ammunition under all conditions of visibility, weather, and terrain, with or without adjustment.

The development of field artillery atomic delivery means demands that an evolutionary process be instituted to integrate new developments and capabilities with our proved tactical concepts and organizations

Current artillery organizations are designed to provide support to the field army. This means that the factors of range of weapons and caliber have been developed to fit the requirements of both direct and general support artillery and provide the balance and level of fire support required throughout the width and depth of the field army area.

Artillery Support Requirements

In a nonatomic war the tactics developed for the employment of field artillery units have followed in logical sequence the evolution of the supported forces' tactics. The development of future artillery tactics for an atomic war must, in a like manner, be consistent with those tactics evolved for the supported force. From the artillery standpoint these tactical concepts need not be revolutionary in nature since the mission of the artillery will be relatively unchanged. In either type of war the force commander must form a base of fire and utilize this base adequately in conducting operations employing the "time honored" principles of fire and maneuver.

The principles of providing supporting fires to infantry and armored units will not change in the advent of atomic war. Both direct and general support artillery will continue to be required; direct support to provide the basic close fire support means to the supported commander, and general support to provide the senior

commander a capability of influencing the course of action and furnishing reinforcing fires to those units who require additional artillery support in the accomplishment of their missions. The question as to the amount and type of direct and general support artillery required in an atomic war has been discussed at great length since the acceptance of the atom bomb as a tactical weapon.

One school of thought which is prevalent today argues that the use of atomic weapons on the battlefield will do away with massed artillery fires. There is no doubt that there will be many targets, located within the enemy's position, that may be attacked more profitably and effectively with atomic weapons than with massed artillery fires. Many analysts agree, however, that there still remains a requirement to attain the same level of massed conventional direct support fires in the contact zone that has been furnished in the past.

The contact zone is considered to be that area immediately forward of friendly positions and is an area in which atomic weapons cannot normally be employed without exposing friendly forces to their effects. Atomic weapons can be employed within certain portions of this area if friendly forces have been afforded an opportunity to protect themselves. It is anticipated, however, that a great percentage of available atomic weapons will be used against targets of opportunity, fleeting in nature; such utilization may not provide friendly troops with appropriate time to assume an adequate protective posture. Since it is extremely important that our atomic firepower potential be employed against targets of opportunity, and that in such circumstances friendly forces may be in unwarned and exposed positions, stringent safety criteria must necessarily be observed.

Certain trends in proposed organizational and tactical concepts envision the

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use of compact, integrated, self-sustaining battle groups fighting relatively independent battles. These combat groups are envisaged as being widely dispersed, generally in a uniform distribution, throughout the battle area so as to reduce the vulnerability of the over-all force to atomic attack.

This concept initially appears to satisfy the requirement for our forces to "live on the battlefield" insofar as destruction from atomic weapons is concerned. Providing the enemy does not employ atomic weapons whose effects would encompass more than one such combat formation, the integrity of the force as a whole would remain relatively combat effective even with a loss of one or two such groups.

In analyzing troop dispositions in such a tactical posture on the battlefield, it appears that considerable areas in the general zone of contact are easily accessible to infiltration and/or multiple penetration by enemy forces. If an aggressive enemy is afforded such an opportunity, he could accurately locate several dispersed units and render these combat groups ineffective by employing multiple atomic weapons.

Dispersion of Artillery

The natural question then appears to be, "Is the dispersed combat group formation as invulnerable to atomic disaster as our present tactical dispositions, wherein we can restrict wholesale infiltration of our forward areas?" This question is of prime importance to the entire force as well as to the artillery, and it might be interesting to note what effect the tactical posture of the supported force will have on the field artillery mission and the artillery's capability to perform its support mission. Some of the more apparent problems that confront the field artillery in providing support to the dispersed formation concept must be considered

The question of dispersion of field artillery units in itself is not a new subject since dispersion has been advocated in previous wars in order to prevent a great number of casualties from a single weapon. Dispersion applies equally to individuals, small units, and large units; by individuals it is still fundamental and applies to all forces on the battlefield, combat and service troops alike. The degree to which dispersion may be practiced by small and large units will vary, however, with the situation and type of operation being conducted. Basically, the actual amount of dispersion in distance between field artillery units must depend on the mission assigned the unit, the means employed in maintaining control of subordinate units, and contact with adjacent and higher headquarters, coupled with the requirement for integrated defense and security of unit installations.

Dispersion, judiciously tempered by the necessity for unit cohesion and coordinated action, is the keynote. In any situation our supporting fires must be available at the time and place needed and in the required amounts. Dispersion of the direct support field artillery will largely be dependent on the actual location of the supported force, since field artillery units must be positioned where they can best accomplish their mission. In supporting the dispersed combat group concept, direct support artillery elements will usually be separated by at least several thousand yards.

General support artillery must also be positioned where it can best accomplish its mission. In view of their requirement to provide support to units employed on greater frontages and depths than heretofore, it would appear that general support artillery units will be positioned generally in a dispersed array, with relatively large distances between units. The problem of dispersion within a field artillery unit, both direct and general sup-

port, is concerned primarily with defense against infiltration, guerrilla activity, air attack, artillery, and atomic weapons. Each of these factors must be weighed in arriving at what is considered to be a proper balance in dispersion with regard to the capability of the enemy to employ any or all of the above means at any particular time.

Level of Artillery Fire Support

The reduction in the level of artillery fire support occasioned by a tactical concept visualizing widely dispersed formations is a serious problem to the force commander since the attainment of ascendancy over the hostile artillery will, in most instances, be exceedingly difficult to attain. In the past it has been axiomatic that friendly artillery gain this ascendancy over the hostile artillery to ensure that supported forces can maneuver in the battle zone without accepting the risk of prohibitive losses.

If the field army were to be deployed in accordance with the dispersed formation concept, it is questionable that the required superiority could be gained over enemy artillery since it is entirely possible that in any future war, atomic or non-atomic, the number of United States artillery weapons may not match those of the enemy. Even though this differential can be overcome to some extent by the use of superior fire techniques, improved weapon accuracy, ammunition possessing greater lethality, increased rates of fire, and weapons possessing greater tactical mobility, the required ascendancy still might not be attained.

The reasons for the reduction in the level of support are easily seen, for in providing artillery support to isolated battle groups dispersed thousands of yards from one another, the width and depth of the division, corps, and field army increases to the extent that range of artillery weapons alone precludes artillery

units from providing the same level of fire support they are presently capable of generating under current nonatomic tactical situations. In concert with the difficulty encountered due to the range limitation of current weapons in support of the proposed combat group formations, additional problems are inherent in fulfilling survey, control, communications, and security requirements.

In providing fire support to the dispersed concept, the problem of security of artillery units is of greater magnitude than in the past. Field artillery units will probably be subjected to continual harassment and quite possibly to heavy ground attack from enemy forces that are relatively free to infiltrate forward positions. There are many historical examples of artillery units defending themselves from heavy ground attack and current artillery organizations are, in fact, designed to give themselves the capability of defense against ground attack.

However, when an artillery unit is required to defend itself against an attack by enemy infantry and/or armor, its primary mission of providing continuous fires to the supported forces will be seriously curtailed, if not altogether prohibited. The problem that immediately presents itself in providing continuous fire support to farflung combat group formations is whether to provide the artillery with organic security elements which would be capable of defending the unit from heavy ground attack, or rely on infantry protection.

In arriving at the cheapest "security" solution (manpowerwise), some thought has been given to emplacing the direct support artillery elements within the supported infantry perimeters. Although this solution appears to solve the security problem of artillery in the atomic era, some of the disadvantages of such a concept become readily apparent. One is the problem of diversified position areas,

where the infantry requires commanding terrain while the artillery occupies positions in defilade. Further, the minimum range of the direct support artillery positioned within infantry perimeters would preclude providing close-in supporting fires throughout the battle position.

In keeping with the artillery mission of providing accurate and timely fires to the supported forces, artillery elements must be able to position themselves where they can best accomplish their mission. In so doing, the cheapest solution of providing security to the artillery may have to be abandoned in favor of a more expensive, yet more compatible one. Manpowerwise, the addition of organic security elements to artillery units would be costly, and based on the Army's austere strength ceilings, this solution may be unacceptable.

The remaining solution for providing security to artillery units appears to be essentially the method in operation today. In this method artillery units are provided a limited capability of self-protection; the bulk of protection or security is gained from the general positioning of infantry units in the forward battle areas in order to deny the enemy a mass infiltration capability and the resulting harassment of artillery units.

Centralized Control

Organizationally, artillery has maintained control of artillery units at the highest level consistent with its capabilities, the foreseeable mission, and the situation. Thus organized, it provides the force commander a highly flexible and potent means of influencing the action, with fire support means capable of being shifted almost instantly from one critical area of the battlefield to another. This need for centralized control will not change with the advent of an atomic war.

The field artillery, however, will be unable to maintain the same level of centralized control when supporting the dis-

persed formation concept because of the increased problems in providing the control facilities of communications, survey, and liaison. A continuation and further extension of current organizational doctrine would permit the artillery to operate more efficiently either as part of a larger force or independently.

Mobility

In the past, field artillery development has coincided with that of the supported forces. Where cross-country mobility has been required in support of armor, the artillery has been mounted in tracked vehicles which possessed the same mobility as the tank; in the infantry division, artillery possessed better than equal mobility with the basic combat elements. In an atomic war the same basic precept still holds, and the artillery must possess the same or better mobility than the supported force. Future requirements for greater ground and air mobility of field artillery is recognized. In keeping pace with the supported forces' mobility, field artillery must be designed to be air transported and still maintain high ground mobility. These two requirements are somewhat divergent and in order to strike a happy medium successfully, considerable progress in future weapons development is in order.

Summary

In summarizing the major differences of nonatomic and atomic tactics from the viewpoint of fire support requirements and artillery organization, the following facts become evident. First, the mission of the artillery remains unchanged. In accomplishing this mission, however, the artillery may be confronted with greater requirements in providing support to an atomic force than to a nonatomic force dependent upon changes in the method of employment of the supported force. Second, artillery units must be organized

and equipped to operate either as part of a larger force or independently; in either instance the artillery should continue to be retained under the highest control consistent with the mission and situation. Third, in an atomic war there still remains a requirement for massed non-atomic artillery fires to be delivered on close-in targets and on those targets which by size, type, or composition are not appropriate for atomic attack. Fourth, artillery units must possess greater mobility and maneuverability if engaged in an atomic war to ensure attainment of the highest possible level of conventional fire support in the event tactical concepts dictate widely dispersed formations. Fifth, the security of artillery units in an atomic

war is of prime importance to the supported force commander. Security may be provided artillery by attachment of infantry units to the artillery, or by infantry units controlling the ground in the forward areas, thereby preventing mass infiltration and subsequent harassment of artillery units.

Present operational and organizational concepts were developed on sound principles and have been tested on the best "terrain board" that has ever been available—the battlefield. With the advent of the atomic era an orderly evolutionary process must be instituted to integrate new developments and capabilities with our proved tactical and organizational concepts.

PAYMENT FOR ARTICLES

Remuneration for published articles submitted by military writers (active-duty personnel of the uniformed services of the United States Armed Forces and students of Allied countries while attending the Command and General Staff College) in the magazine is on a competitive basis.

Monthly Award—All articles written by military authors published in each issue are reviewed by a board of officers representing the Command and General Staff College. The board selects the first and second best articles published each month. The authors of the selected articles receive \$100 and \$50, respectively. All other military authors receive a \$25 honorarium.

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SACLANT

NATO'S ATLANTIC PARTNER

Lieutenant Colonel Philip A. Wyman, *General Staff*
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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

British submarine *Seraph*, he spirited General Henri Giraud out of occupied France.

History of NATO

In order to put SACLANT in proper perspective and to appreciate how it fits into the defense of the free world, it is necessary to consider briefly something of its history and its relationship to other organizations.

IN NORFOLK, Virginia, near the Armed Forces Staff College, is situated one of the most important nerve centers of the military forces of the free world. Here, in a 2-story, red brick converted hospital, is the headquarters of the Supreme Allied Commander Atlantic (SACLANT), the only major North Atlantic Treaty Organization (NATO) headquarters on American soil. Here, an international, interservice military staff plans for the defense of the Atlantic area.

In 1949 the North Atlantic Treaty was signed by 12 sovereign nations—Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States. The treaty created NATO to provide effective collective security for the signatories. Under terms of the treaty an attack on one NATO nation is considered an attack on all.

The man who commands the Allied Command Atlantic is Admiral Jerauld Wright, 57-year-old son of a United States Army General. Admiral Wright served as naval aide for Presidents Coolidge and Hoover, and early in World War II was a member of General Eisenhower's staff. He was one of a small group of officers who, with General Mark W. Clark, paddled ashore from a submarine to negotiate with the French in North Africa prior to the Allied landings there in 1942. Not long after that, acting in temporary command of the

In 1952 Greece and Turkey joined the alliance. In May 1955 West Germany became the fifteenth member of NATO.

In April 1952 SACLANT was established with headquarters at Norfolk, Virginia. The 140 international officers of SACLANT's staff come from eight NATO nations bordering the Atlantic—Canada, Denmark, France, the Netherlands, Norway, Portugal, the United Kingdom, and the United States.

SACLANT is the over-all NATO commander of the North Atlantic area. Plans for defense of the Atlantic area are formulated here at this important nerve center of the military forces of the free world

SACLANT's command covers a staggering area: more than 12 million square miles of ocean extending all the way from the Tropic of Cancer, just north of Cuba, to the North Pole, and from the eastern shores of North America to the coast of Europe.

Organization Within NATO

The top policy-making body in NATO is civilian and is known as the North Atlantic Council. Each member nation is represented on the North Atlantic Council. Usually foreign ministers, defense ministers, and finance ministers are included in each government's delegation; these cabinet members meet together two or three times a year at the Palais de Chaillot in Paris.

SACLANT is responsible to the North Atlantic Council through the Military Committee, which consists of one chief of staff or a special representative from each NATO nation. The Military Committee operates more directly through its executive agency—the Standing Group, consisting of representatives of France, the United Kingdom, and the United States. The Standing Group has a continuously operating headquarters in the Pentagon in Washington. SACLAN is the commander of all NATO forces in the North Atlantic area, ground, air, and

naval. NATO has two other major commands and one planning group on an equal level with the Allied Command Atlantic—the Allied Command Europe, the Channel Command, and the Canada-United States Regional Planning Group.

NATO's Military Tasks

NATO has three primary military tasks:

1. The defense of Europe—General Gruenther's task as Supreme Allied Commander Europe (SACEUR).

2. The defense of the North American Continent—a joint United States-Canadian responsibility.

3. The defense of the Atlantic area, that is, keeping open the vital lifeline linking North America and Europe—Admiral Wright's task as SACLAN.

Each of these tasks is of equal importance.

The Soviet Threat

Today, the Soviet Union and her European satellites have 6 million men under arms, and their combined industrial capacity is capable of supporting these forces with the most modern of arms and equipment. Soviet industrial production is expanding steadily and, in addition to having mastered the production of nuclear weapons, her technicians are, according to Soviet leaders, well on the way to producing the Intercontinental Ballistic Missile and other advanced weapons of destruction.

Now let us see how the Soviets are likely to employ their enormous and well-equipped forces. Considering ground forces, today they have some 2.5 to 3 million men organized into about 175 divisions which have just undergone a very extensive modernization; they are highly mechanized and enjoy tremendous firepower. This force is supported by about 21,000 modern jet fighter and bomber aircraft. The bulk of this force is aimed at the heart of Europe, and is spearheaded by

Lieutenant Colonel Philip A. Wyman was graduated from the United States Military Academy in 1942. During World War II he served in Italy with the 88th Infantry Division. Following a year of occupation duty in Trieste, he was assigned to USMA as an instructor for a 4-year period. He was with the Office of the Assistant Chief of Staff, G-2, in Washington, for 2 years. In Korea he commanded the 17th Field Artillery Battalion, and later served as deputy artillery officer, Eighth Army. After completing the 1954-55 Regular Course of the Command and General Staff College, he assumed his present position as Army member of the Intelligence Division of the Supreme Allied Commander Atlantic's combined NATO staff.

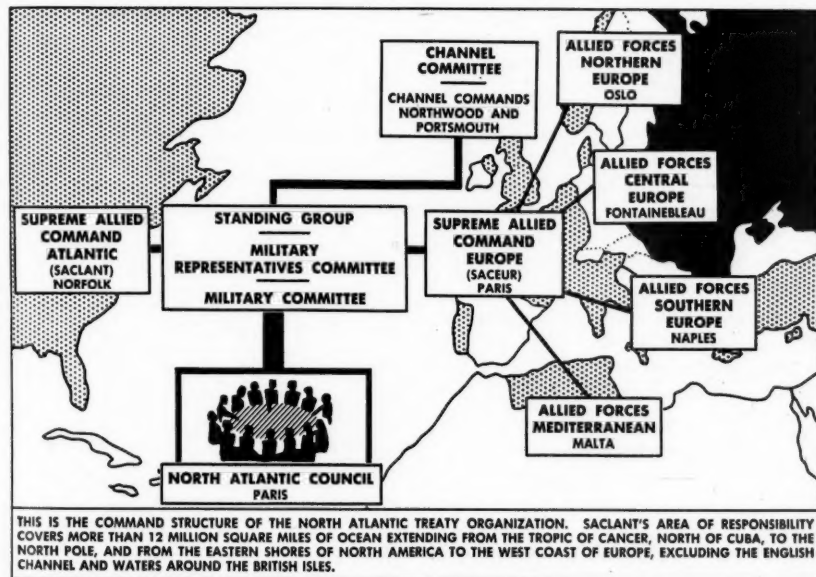
22 divisions, armored and mechanized, in East Germany. All these ground and air forces are kept at a high pitch of readiness and are backed by a large and trained reserve, ready for mobilization.

The first of NATO's three main military tasks is the defense of Europe, which primarily is the mission of SACEUR.

NATO's second military task is the defense of the North American Continent. To penetrate this defense, the Soviets are building up a very powerful long-range

is the task entrusted to SACLANT and, therefore, we will deal with the Soviet threat to SACLANT, that is, the Soviet naval forces, in more detail.

The Soviet Union has become a first-class naval power. In the last 10 years the Soviet Navy has risen from seventh to second place in the world navies and it is still expanding. At the present time it consists of about 25 modern cruisers, about 130 modern destroyers, and what is rapidly becoming the largest submarine fleet



air force consisting of jet and turboprop aircraft some of which are capable of reaching well into the industrial heart of Canada and the United States and delivering atom and hydrogen bombs. Also, Soviet missile-launching submarines would pose a serious nuclear threat to the coastal areas of North America.

NATO's third military task is the defense of the Atlantic and the preservation of the vital flow of supplies across the waters between America and Europe. This

the world has ever seen, some 400 submarines of which about half are long-range oceangoing types. They are adding rapidly to this enormous fleet. This large naval force is supported by a shore-based naval air arm of approximately 3,000 jet fighters and light bombers.

Now, why does the Soviet Union want these large naval forces? She does not depend to any extent on the sea for her supplies or communications, and these naval forces are greatly in excess of anything

she may require for defensive purposes. The answer becomes all too clear if we look at Europe as seen from Moscow. It is a peninsula bounded on the north, west, and south by the sea. The free use of these seas is absolutely vital for the survival of European NATO. These Soviet naval forces have been built with the primary aim of destroying the commerce and vital sea communications of the free world so as to isolate Europe from the United States and make easier the Soviet aim of world domination.

At the end of 1939 when Hitler started his war in Europe he had an oceangoing submarine fleet which threatened the Atlantic lifeline and came near to cutting it, and he started the war with only 67 submarines! This year the Soviets from their Northern and Baltic Fleets alone will threaten that same Atlantic lifeline with an oceangoing submarine fleet seven times as large, and supported by six times as many aircraft.

Therefore, there is a grave danger that by an all-out submarine attack on our shipping and naval units early in a war, the Soviets might virtually isolate Europe from America.

SACLANT's Tasks

SACLANT directs the collective deep sea naval forces of the NATO nations which border the Atlantic. With this force Admiral Wright must counter the Soviet threat—the desire to drive a steel wedge down the Atlantic to sever the lifeline that binds Europe and North America.

SACLANT's defensive strategy to achieve this objective is: *to strike and simultaneously to defend*. In case of necessity we would move to block the enemy and, at the same time, defend our vital points against his attacks. The tasks of SACLANT in the event of war are: first, as a defensive measure, to project atomic naval power against the attacking enemy; second, to defend as far forward as pos-

sible; and third, to protect the trade routes.

To carry out SACLANT's first job—the initial vigorous defense—the Striking Fleet would project its atomic power against the enemy. This fleet is a team of ships organized around the atomic striking power of fast aircraft carriers. On the surface, destroyers and cruisers provide protection against enemy ships and submarines; in the air, fighters and soon guided missiles protect it against enemy aircraft. In addition, there are picket submarines and long-range aircraft which are an integral part of the team to provide early warning of attack.

To the rear of the fleet are the supply ships. They carry ammunition, food, spare parts, and fuel to keep the fleet provided with all of the things which are needed for it to continue the fight for an indefinite period.

In effect, the defensive Striking Fleet is an airfield complex at sea. It is geared for atomic war. It is dispersed over an area about the size of the State of Maine. It is mobile; it is flexible. It can project its power many miles inland from salt water against targets of naval interest, or to support the land and air forces of SACEUR—the European NATO partner of SACLANT.

And it packs a powerful atomic wallop. But this fleet is not sufficient unto itself. It would be in battle along with western air forces and the ground forces, wherever needed. It would render support to other NATO commanders and, in turn, would be supported by them.

As for SACLANT's second job of keeping the enemy out of our ocean, this would require that we operate our naval forces as far forward as possible to meet him on his way from his bases to our sealanes.

Aircraft carriers, destroyers, mines, and other measures would be employed to make the sea transit an unpopular operation with Soviet sea captains.



The flags of all the NATO nations fly in a semicircle in front of the headquarters of the Allied Command Atlantic in Norfolk, Virginia, and their order is rotated daily. Below, left, is Admiral Jerauld Wright, who assumed command of SACLANT in 1954, and on the right, General Alfred M. Gruenther, Supreme Allied Commander Europe.



The mainstay in these operations would be the antisubmarine carrier group, built around an aircraft carrier equipped with special type aircraft for hunting and killing submarines. It also carries helicopters with special underwater sound devices for locating submarines. It is supported by fast escorts, which also specialize in hunting and killing submarines. It is a highly trained and very effective team. This same type group also would contribute largely to SACLANT's third defensive job—that of protecting our shipping on the sealanes.

Once sea convoys are organized and in operation, they must be escorted—for their protection. These escorts are of the type with the antisubmarine carrier group. They would operate close to the convoy itself, whereas the antisubmarine carrier group most likely would operate away from the convoy, in the direction of the most probable threat.

The close-in escort of convoys is a rugged job. It does not have the same glamour as the operations of the defensive Striking Fleet or even as the antisubmarine carrier group. Nevertheless, it is a very important task which must be performed and which requires the very highest type of seamanship and durability of both man and machine.

The foregoing thumbnail sketch indicates the magnitude and complexity of the tasks which must be performed. For the proper performance and coordination of these manifold operations, the highest order of organization and training is required. Moreover, if they are to do a good job, the combat units and their crews must be in a constant state of training and readiness.

SACLANT is assisted and advised by his international integrated staff. At his headquarters in Norfolk, Virginia, he has the intelligence, the plans, the communications, and the plotting facilities to direct and coordinate all these naval forces

in the performance of their various missions.

Defense of Europe and the Atlantic undoubtedly would require the full coordinated efforts of the NATO forces commanded by both General Gruenther and Admiral Wright. Initially, forces of SACEUR must act as the shield for Western Europe, pending arrival of reinforcements from North America.

During any battle for Europe, SACLANT must keep the Atlantic supply artery open, for the fighting forces of Europe cannot survive without this vital flow of weapons, food, and ammunition. This coordinated effort has been planned and rehearsed; large-scale NATO-wide international exercises have been held to test NATO plans. The problems of supporting large forces in Europe are known.

What SACLANT Does

SACLANT has four primary peacetime functions—planning for its military forces in both peace and war, training the forces earmarked for SACLANT, making recommendations to the NATO Council regarding these forces, and establishing an efficient organization suitable as a nucleus for wartime expansion. In other words, the peacetime mission of SACLANT is to organize, train, and exercise ships and aircraft of various nationalities so they can operate effectively in integrated units in retaliation against the Soviet bloc if and when the Soviet bloc forces attack NATO territory.

The Allied Command Atlantic is a team on which no nation is predominant. The SACLANT staff is an intermingling of officers of member nations, the only criterion for assignment being that appointments be held by those best qualified to fill them. The balanced and experienced staff works smoothly without friction or national jealousies.

The staff divisions of SACLANT include: C1 (Personnel and Administration),

C2 (Intelligence), C3 (Plans, Operations, and Training), C4 (Logistics), CD (Communications), BF (Budget and Finance), and PI (Public Information).

The C1 Division coordinates all administrative activities.

The C2 Division ensures the timely provision of intelligence to enable the supreme commander, his staff, and major subordinate commanders to accomplish their missions. In addition, C2 is responsible that adequate intelligence organization exists to make possible unrestricted flow of intelligence in war throughout the Atlantic Command.

The C3 Division deals with the organization, mobilization, and training of forces earmarked for the Allied Command Atlantic. By means of training exercises the different national contingents are being welded into a unified force. Another vital function of C3 is the preparation of over-all defense plans for the Atlantic area plus plans for support of SACEUR. Specifically, C3 plans how the Atlantic lifeline will be kept open and how the SACLANT forces will fight the battle of the Atlantic, should this battle be forced upon them.

The C4 Division has the difficult problem of ensuring coordination among the NATO nations in the matters of supplying and transporting the Allied forces. C4 ensures standardization so that a Portuguese tanker can refuel a United States destroyer; a British base can provide the same spare part for a Dutch carrier; and a French food depot can supply a British force. Exchanging logistic support emphasizes the importance of standardization of items such as food, fuel, spare parts, ammunition, electronic equipment, orders, and signal procedures. C4 solves many of these problems by close coordination with NATO's Military Agency for Standardization.

The Communications Division plans, coordinates, and perfects radio, telephone, and radar networks which hurdle national frontiers. The Budget and Finance Division acts as principal financial advisor for the Supreme Commander Atlantic. SACLANT has its own budget and operates on money provided by all 15 member nations. The Public Information Division maintains direct contact with the major international information agencies.

How Ready Is SACLANT?

SACLANT is concerned about the growing power of the Soviet Navy. This much is known about Soviet versus NATO naval strength—the Communists have more than 400 submarines; NATO has less than 300. The Soviet Navy has on active duty more high-speed cruisers than any single NATO nation. They could be used as raiders against NATO shipping.

Furthermore, the entire Soviet Navy is manned to strength, and none of its fleet is in mothballs. Also important is the fact that the Soviets are outbuilding the United States in submarines.

Admiral Wright is often asked, "How strong is SACLANT?" His answer is: "Three years ago we had 8 navies in the Atlantic, each on its own. Now we have 1 NATO navy, and by virtue of organization it is far better than the sum of the 8." Admiral Wright is convinced that NATO is the greatest deterrent to war ever conceived—but he adds the proviso, "so long as the alliance remains strong."

How ready is SACLANT? Admiral Wright answers this question frequently. "In this age of jet aircraft and nuclear weapons, the first requisite of preparedness is instant readiness." He adds, "We now have our strategic guidance, we have a command organization and plans agreed by all the NATO nations, we have our task assigned—NATO's fleet stands ready, right now."

HOW WILL AGGRESSOR FIGHT AN ATOMIC WAR?

Lieutenant Colonel Irving Heymont, *Infantry*
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The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

THE Aggressor concept was developed by the United States Army immediately following World War II to ensure more realistic training in maneuvers and map exercises.

Aggressor, the mythical totalitarian nation, provides an "enemy" with an organization and a tactical doctrine varying in many respects from that of the United States Army. It now is beyond question that the use of the Aggressor concept has enhanced training by requiring units to know the maneuver enemy in order to fight intelligently.

If, however, Aggressor tactical doctrines remain static while ours advance, then the value of Aggressor is lost. In fact, the use of a maneuver enemy who employs obsolete tactics is dangerous. It is essential that Aggressor be given a modern tactical doctrine to be employed when both sides use atomic weapons.

The purpose of this article, then, is to outline in broad terms a reasonable tactical atomic doctrine for Aggressor. The outline doctrine which follows was developed in consonance with the reference used in incorporating Aggressor into instructional problems at the Command and General Staff College. (Special Text 30-102-1,

Aggressor Military Forces.) The proposed atomic doctrine will, of course, have to be modified in the light of future atomic developments. The ideal would be the eventual development of an Aggressor doctrine equally applicable in both atomic and nonatomic warfare.

The basic Aggressor tenet that victory can be achieved only by the offensive of combined arms coupled with the employment of mass on narrow fronts is only modified and extended to capitalize on the effects of atomic weapons. The frontages, depths, and formations developed in this proposed doctrine are only guides. Aggressor is given the capability of experimenting freely in developing his atomic doctrine.

Deeper objectives, greater operational speed and surprise, and concurrent protection of troops from the effects of enemy atomic weapons are added. The organization of Aggressor combat divisions is unchanged. Later, it may be desirable to give these divisions increased firepower, armor, and mobility to enable them to better implement the proposed doctrine. To simplify atomic calculations and to keep our maneuvers in balance, Aggressor is given the capability of employing atomic weapons comparable in yield and characteristics to all unclassified United States atomic weapons and delivery means.

While the Aggressor army group commander commands the delivery means of tactical atomic weapons, including air, he may further delegate control. Usually this

control will not be delegated below the army level in keeping with the normal Aggressor policy of centralizing control. All Aggressor commanders, however, recommend suitable atomic targets that will facilitate the accomplishment of their missions.

Atomic weapons do not materially change the role of Aggressor artillery or air support but are integrated as additional powerful means to enhance the devastating effect of the usual massed fire support. At times, atomic weapons replace completely, or in part, the artillery and air preparation or counterpreparation, particularly when surprise is a major consideration. The Aggressor air army of the army group now has the obvious additional missions of air delivering atomic weapons and destroying enemy atomic delivery means. Artillery still is massed at the focal points but is dispersed in greater depth. For the same reason, the concentration of about 230 to 260 pieces, including heavy mortars, per linear 1,000 yards of front in a nonatomic situation is now spread out over about a linear mile.

Maximum Use of SOP

To ensure continuity of operations in the face of enemy atomic attacks, protective measures are reduced to standing operating procedures (SOP) in keeping with Aggressor's usual detailed advance planning. One of these measures is the

tion nets and are manned by skeleton staffs.

Intelligence operations are faster and cover deeper areas. The intelligence effort concentrates on the following items:

1. Enemy atomic capabilities and intentions to employ atomic weapons.
2. Location of enemy atomic weapons delivery means.
3. Location and surveillance of targets suitable for atomic attack.

Clandestine agent operations now are even more valuable. The depth of their operations are increased and they have the means to transmit information rapidly. With air reconnaissance of greater importance, Aggressor air reconnaissance units are increased and equipped with jet planes to permit faster reconnaissance of deeper areas.

Because of greater reliance on radio communication and radar, Aggressor has more signal units capable of electronic countermeasures and communications intercept and analysis. These units are attached to the headquarters of the rifle corps and higher echelons.

The basic Aggressor logistical system is retained but some techniques are modified. Supply installations are smaller and dispersed. To permit more dispersion, the depths of unit rear areas are increased. As the depth of the army group rear area already is about 100 to 150 miles, no further increase there is necessary. In

If Aggressor tactical doctrines remain static while our doctrines advance, the value of Aggressor as a realistic maneuver enemy is lost. Fighting a maneuver enemy who employs obsolete tactics is dangerous

establishment of alternate command posts at division and higher levels. Alternate and main command posts usually are separated sufficiently to prevent destruction of both by one atomic weapon of 100-kiloton yield or less. Aggressor alternate command posts have complete communica-

forward areas, Aggressor minimizes the concentration of service units and supply installations to avoid congestion. Unit levels of supply are increased to ensure continuity of operations in the event major supply installations are rendered inoperative. For greater flexibility, Ag-

gressor now makes wider use of fixed- and rotary-wing aircraft for supply and evacuation. Always industrious at digging entrenchments, Aggressor also emphasizes subsurface storage of supplies and equipment.

In view of the devastating personnel casualties possible with atomic weapons, Aggressor's former policy of indifference to casualties is no longer valid. Realizing that a nation cannot lose combat units on a wholesale scale and still win the war, Aggressor does not recklessly expose his units. Maximum use is made of dispersion, particularly in concentration and assembly areas. Aggressor attempts to achieve such dispersion so no unit larger than a regiment is a remunerative target for a single atomic weapon. The desired minimum size of an assembly area for a rifle regiment is 8 square miles, and 40 square miles for a rifle division. The size of the regimental area was calculated by the use of unclassified atomic weapon effects tables to determine the area in which a 20-kiloton weapon would not cause more than 30 percent casualties. The size of the division assembly area was determined on the same basis except a 100-kiloton weapon was assumed.

Provision of entrenchments with overhead covers for personnel and subsurface shelters for tanks, vehicles, and supplies wherever possible is now habitual. Assembly and concentration areas are provided

with such shelters prior to occupancy whenever possible. Behind the line of contact, units normally move rapidly at night and with strict control to prevent undue massing.

Principles of Offense

As stated earlier, the Aggressor tenet that victory can be achieved only by the offensive of combined arms coupled with the employment of mass is only modified. Aggressor assumes that the dispersion required on the atomic battlefield and the destructive effects of atomic weapons reduce the requirement for a powerful 3-echelon formation to batter through strong, deep, and mutually supporting defense areas.

Although concentration of assault units on narrow fronts to achieve mass continues to be required, the narrow frontage of the main effort now may be as much as twice as wide as before to permit greater freedom of maneuver and adequate dispersion. For the same reasons, concentration and assembly areas for all operations may be as much as twice as far to the rear, subject to time and space factors necessary for the accomplishment of the unit mission.

Mobility, maintenance of the momentum of the attack, and close contact with the enemy are still emphasized. Every opportunity is exploited to envelop, surround, and subsequently annihilate the enemy. Although Aggressor will not needlessly expose his troops, considerable risks may be accepted in crossing contaminated areas that cannot be bypassed in order to maintain the momentum of the attack. Whenever the terrain and available forces permit, the "armored offensive" is used. This type of offensive is favored because of the mobility of units involved, the superior organic communication facilities, and the relative invulnerability as compared with rifle units.

The opening phases of offensives still

Lieutenant Colonel Irving Heymont served in Europe with the 5th Infantry Regiment during World War II. He was an ROTC instructor at the College of the City of New York for 4 years; was graduated from the 1951-52 Regular Course of the Command and General Staff College; commanded the 1st Battalion, 160th Infantry Regiment, in Korea; was advisor to the Chief of Staff of the Republic of Korea II Corps; served as G3, Headquarters, Fort Devens, Massachusetts; and was assigned to his present position on the faculty of the Command and General Staff College in July 1955.

are planned in great detail. Later phases are only outlined because fluid tactics will of necessity be the rule on the atomic battlefield. Initiative on the part of subordinate commanders and rapid and concurrent planning are encouraged to a greater degree.

As before, Aggressor conducts major offensives by employing one or more army groups toward a specific objective which may be over 300 miles distant. The offensive takes the usual Aggressor form of deep armored thrusts combined with wide encirclements designed to annihilate enemy forces and cause the collapse of resistance on a wide front.

The principal uses of atomic weapons in an Aggressor major offensive are:

1. Initial preparation.
2. Reduction of enemy forces and defenses which may slow the momentum of the offensive.
3. Prevention and destruction of enemy counterattacks.
4. Elimination of delivery and control means of enemy atomic weapons that cannot otherwise be rendered ineffective.
5. Reduction of encircled large enemy forces.

While allocation of available weapons for the above purposes will vary with the strength of the enemy defenses and the scheme of maneuver, priority is usually given to destruction of the enemy corps in contact. The next priority normally is destruction of other large enemy reserves and enemy atomic weapons delivery means. Some atomic weapons are always withheld to support the mechanized army when committed and for unforeseen contingencies.

Army Group in Offense

The army group attack zone is about 100 miles wide—the maximum width in a non-atomic situation. The depth of the zone is from 100 to 150 miles. The army group main effort is usually made initially on a front of about 25 to 35 miles representing

about one-third of the entire group front. This is about the same ratio employed in nonatomic warfare. There are virtually no changes in the techniques employed in preparation for the offensive. As to be expected, deception planning and secrecy are emphasized.

The army group normally attacks in two echelons. The composition of each echelon depends primarily on enemy strength and the terrain. If the enemy is weak and terrain permits, the mechanized army usually is employed in the first echelon; otherwise, in the second echelon. In an offensive against a strong enemy the typical army group of 3 rifle armies and 1 mechanized army usually attacks with 2 rifle armies in the first echelon and with 1 rifle army and the mechanized army in the second echelon. In attacking a weak enemy the same army group may attack with 1 rifle army and the mechanized army in the first echelon and the remaining 2 rifle armies in the second echelon.

Aggressor still considers that the major offensive generally will consist of three phases:

First phase.—Penetration, encirclement, and destruction of the enemy corps in contact. This phase lasts about 2 to 6 days and is carried out by an advance of 80 to 150 miles. This represents a slightly shorter time interval and a deeper advance than in the first phase of a nonatomic offensive.

Second phase.—Destruction of the enemy theater or army reserves. This phase lasts about 3 to 5 days and carries the advance 60 to 150 miles farther. Aggressor's preparation for a major atomic offensive now includes provision of such logistical and administrative support to permit elimination of the former time-consuming regrouping phase. Aggressor now holds that the momentum of the entire offensive must be uninterrupted in order to keep the enemy off balance and unable to react in strength.

Third phase.—Pursuit of any remaining enemy elements and securing the army group's objective. The pursuit may extend deep into the enemy's homeland or support base.

The phasing of the offensive is flexible and depends on the nature of the enemy's defenses, terrain, and road net. The basic assumption is that atomic weapons permit Aggressor to maintain an average rate of advance of about 25 miles a day for the entire offensive. The Aggressor belief that only rapid offensives win wars is even more applicable to atomic warfare.

The tactical employment of the armies is virtually unchanged. The rifle army of the army group first echelon is employed for the usual tasks of penetration and envelopment of the enemy defense, annihilation of encircled forces, consolidation of overrun areas, and pursuit. The army group second echelon rifle army still is employed for reinforcement of the first echelon, consolidation of overrun areas, flank protection against counterattacks, and outflanking enemy defenses. Regardless of echelon, the mechanized army has the unchanged mission of encircling, from the deep flank and rear, the reserves and defenses of the enemy corps, preventing enemy reserves from breaking up encirclements, overrunning enemy forces and rear areas to prevent establishment of new defensive areas, and pursuit.

Rifle Army in Offense

As in the past, the rifle army usually attacks in two echelons with all rifle corps abreast in the first echelon. The second echelon is composed of the reserves of the rifle army. The rifle army in the second echelon of the army group is either held initially in successive large concentration areas or advances on a designated axis. The attack zone of a first echelon rifle army now is from 20 to 70 miles wide as the width of the army group attack zone is about 100 miles. As the main effort of

the army group is made on a front of 25 to 35 miles, the main effort of the rifle army is made on a front of about 10 to 15 miles. To permit adequate dispersion, the tactical depth of the army zone is increased from about 20 miles to about 30 miles. Although an average rate of advance of 25 miles a day for the offensive has been assumed, it is only reasonable to expect that the first echelon rifle army will advance only about 20 to 30 miles in the first day or two. Of course, army group will have to provide transportation to motorize most of the foot element of the rifle army.

The rifle corps in the first echelon of the rifle army has the unchanged mission of destroying enemy resistance to the front, and, together with adjacent corps and when required, creating gaps large enough to permit the employment of the mechanized army. An advance of 20 to 30 miles by the rifle corps within the first day or two of the offensive can be expected to destroy the continuity of the enemy's defenses as far back as his corps reserves.

The rifle corps normally attacks in two echelons. If part of the secondary effort, or when the enemy is weak, the rifle corps may attack in one echelon as before. If the attack zone of a rifle corps is very narrow, a 3-echelon formation is necessary to achieve dispersion in depth.

The attack formations for either a 4- or 3-division corps are shown in Figure 1.

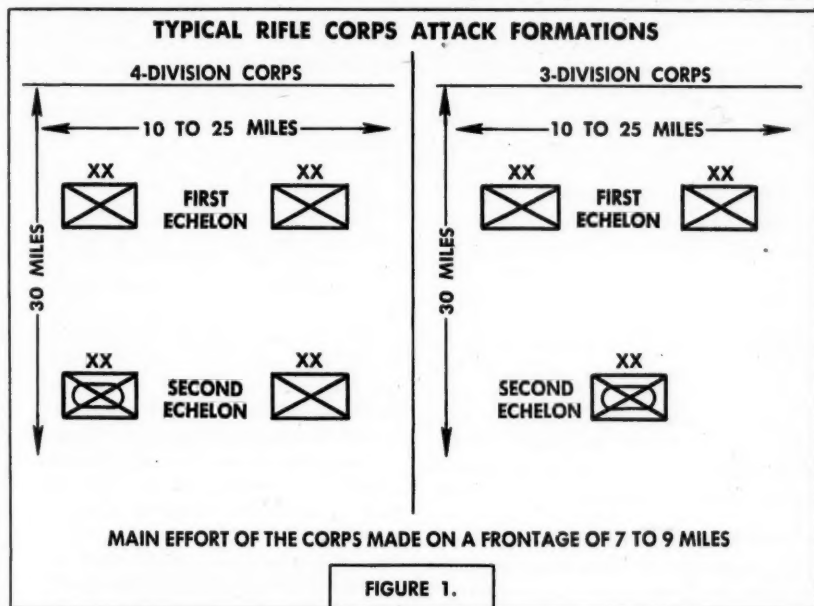
The first echelon has the same mission as under nonatomic conditions—break through the entire depth of the enemy division defensive zone and then continue in accordance with corps scheme of maneuver. The mission of the second echelon also is unchanged—exploit the breakthrough created by the first echelon. If the expected enemy resistance, terrain, and predicted ground conditions after delivery of atomic weapons permit, the mechanized division may be used in the first echelon. In that event the rifle corps second echelon

is either one or two rifle divisions depending on the composition of the corps. The mission of each echelon is unchanged regardless of the corps composition.

The width of the rifle corps zone of attack, derived from the assumed frontage of the rifle army attacking with all corps abreast, is just about twice that under non-atomic conditions. The frontage of the main effort of the rifle corps is a little

later. Strong enemy counterattacks are dealt with by atomic weapons or the use of the second echelon. Preferably, the second echelon is not committed until needed to maintain the momentum of the attack. Upon capture of the rifle corps objective, strong security detachments remain and the major elements of the corps move to dispersal areas pending further operations.

If the enemy uses atomic weapons, the



more than in a nonatomic situation. The tactical depth of the rifle corps area has been increased by about one-half to ensure room for dispersion. Atomic weapons are utilized in the rifle corps preparation to destroy enemy reserves and other vital targets beyond the range of the mass of artillery. The artillery preparation concentrates on the forward enemy elements.

The attack itself is conducted in about the usual manner. Strong points that may slow the momentum of the attack are bypassed wherever possible and reduced

offensive continues with minimum necessary reorganization. When required, unit replacements are made promptly from the rifle corps second echelon or from the reserves of higher headquarters.

The rifle division and its major subordinate rifle elements also attack in two echelons like the rifle corps. The two rifle regiments in the first echelon of the rifle division are usually reinforced with elements of the division tank regiment. The attack zone of a rifle division making the corps main effort will be about 7,000 yards

wide and about 20,000 yards deep. This represents a modest increase over the frontages and depths employed in a non-atomic situation. Any larger increase would mean possible loss of control. For the same reason the frontages and depths of the attack zone of the rifle regiment and rifle battalion are unchanged.

The mechanized division of the rifle corps is employed in the first echelon if the terrain permits and the enemy is weak or has been reduced in effectiveness. In this situation the mechanized division attacks using slight modifications of advance to contact formations. That means an attack in two echelons on a frontage about equal to that assigned to the rifle division in the atomic situation. Figure 2 shows typical attack formations of the mechanized division.

The first echelon, from an attack position about 2 or 3 miles from the line of contact, usually attacks in 2 parallel columns approximately 2 miles apart. In order to avoid deployment until the last possible moment, the columns are preceded by strong detachments reinforced with armor and artillery. Resistance is bypassed and contaminated areas crossed rapidly in order to strike deep quickly.

Mechanized Army in Offense

The mechanized army is employed in the first echelon of the army group wherever possible and conducts its attack with emphasis on rapid and uninterrupted movement, bypassing resistance that cannot be overcome quickly and maintaining close contact with the enemy. Usually a 2-echelon formation is employed with mechanized divisions in the first echelon and tank divisions in the second. Against a weak or overextended enemy, a 1-echelon formation may be used. All this is equally characteristic of the nonatomic "armored offensive." However, in an atomic situation Aggressor expects the mechanized army to maintain an average daily advance of

20 to 40 miles for the duration of the offensive.

The width of the attack zone of the mechanized army is about 20 miles. This width is derived by doubling the average frontage (10,000 yards) of a mechanized division in an advance to contact formation in a nonatomic situation. As the total strength of a mechanized army is smaller than a rifle army, the tactical depth of the mechanized army is 20 miles compared to the 30 miles for a rifle army. To permit flexibility the mechanized army initially can attack on a frontage as small as 10 miles and then extend to its normal frontage.

Principles of Defense

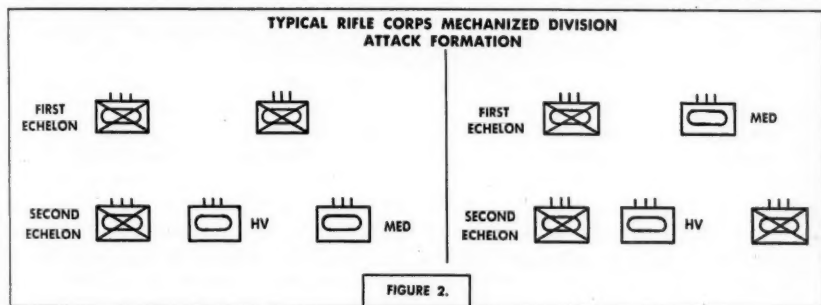
In an atomic situation, when Aggressor must hold terrain, the decentralized position defense—the defense on a wide front—is employed. The centralized position defense with mutually supporting strong points is not considered feasible when atomic weapons are a threat. Consequently, Aggressor defense now is characterized by greater dispersion and depth. Because of this dispersion, stronger and more mobile reserves are required. Aggressor emphasizes protection of troops and matériel from atomic weapons effects in the planning of the defense. The entire defensive position still is fortified lavishly as time permits, with priority to the forward defensive installations. Obstacle belts, both forward and within the position, are constructed and positioned to impede the enemy advance and canalize the attack into areas favorable to the defender.

The Aggressor concept of the defense is based on the rifle divisions of the rifle corps destroying the enemy from positions in a heavily fortified defensive area. If the enemy penetrates the defensive area, the rifle divisions will exhaust the enemy by mobile defense type operations. Large mobile reserves of tank and mechanized

divisions under the rifle army or army group commander, possibly supported by atomic weapons, will make the major counterattack.

In organizing the decentralized position defense in an atomic situation, Aggressor employs his characteristic system of a security zone, main defense zone, second defense zone, and rear defense zone. A rigid pattern of depths of zones is avoided. As usual, the defense is organized at the rifle army level. However, the exact trace of the main defensive zone and points of coordination between divisions are normally designated by the rifle

The depth of the second and rear defense zones is about 10 miles, which also is the maximum depth in a nonatomic situation. Positions and obstacles are prepared throughout the zones as time permits. The reserves of the rifle corps either occupy the second zone or are held farther to the rear in areas affording ready access to its prepared positions. In the event a major penetration of the main defensive zone has been made, or threatened, the second defensive zone is usually occupied. The rear defense zone is manned by the rifle army reserves and by army group troops made available to the rifle army



corps commander. Under atomic conditions the depth of the security zone is unchanged from about 6 to 10 miles as it is adequate for its purpose. The mechanized division of the rifle corps normally is employed initially in this zone. Maintenance of close contact with the enemy is mandatory and a close watch is kept for signs of an enemy withdrawal.

The main defense zone remains the bulwark of the defense. It is selected to take advantage of natural obstacles and terrain that affords maximum passive defense against enemy atomic attacks. To provide adequate depth for dispersion and disposition of the larger reserves, the depth of this zone is increased to 15 to 20 miles, and the forward positions are manned by the rifle divisions of the rifle corps.

commander. The prepared positions of the rear defense zone usually are occupied only when the enemy has penetrated or threatens a penetration of the second defense zone.

Rifle Army in Defense

The rifle army still defends with all rifle corps abreast. The tactical depth of the rifle army area is about 40 miles—the total of the depths of the main, second, and rear defense zones. The width of the defensive area that the rifle army and its components are capable of defending is based on the capability of the rifle division.

In a nonatomic situation the most extended form of defense employed by Aggressor is the mobile defense (more comparable to a United States delaying

action) which is designed primarily to delay the enemy by forcing him to mass to attack. It is assumed that with atomic weapons available, Aggressor forces in a mobile defense formation are capable of holding rather than merely delaying. The maximum width a rifle division can defend in the nonatomic mobile defense is 17 miles and the average width is 12 miles. Using the 12-mile average figure as the minimum frontage and the 17-mile maximum figure as the maximum, we now have the assumed limits of the width of the rifle division defense area in an atomic situation. On that basis the widths of the various Aggressor units are tabulated below:

<i>Unit</i>	<i>Width of Defense Area</i>
Rifle Army	Up to 100 miles
Rifle Corps	Up to 35 miles
Rifle Division	12-17 miles
Rifle Regiment	5-8 miles
Rifle Battalion	2-4 miles

The troops available, the terrain, and the enemy capabilities will determine the exact width of the rifle army and corps defense areas. The rifle corps defends the main defense zone, the second defense zone, and the security zone, if any. Hence the tactical depth of the rifle corps will vary up to 35 miles. A rifle corps consisting of 3 rifle divisions and 1 mechanized division will usually garrison the main defense zone with 2 rifle divisions, holding the others in reserve. The increase in proportion of reserves is not too startling in view of the larger frontages and depths. If the rifle corps should have only two rifle divisions, then the corps reserve is just the mechanized division. If the assigned frontage of the corps is about 15 miles or less, then only one division will be employed to defend the main defense zone. The mechanized division usually is initially employed in the security zone if one is established. The antitank, armored, and engineer reserves of the rifle corps usually are located in the rear part of the

main defensive zone or in the second defensive zone in conformance with normal Aggressor patterns.

Figure 3 depicts a typical rifle division defense sector.

The tactical depth of the rifle division defense zone permits sufficient room for the elements of the corps in the main defense zone.

Usually the rifle regiment in the defense will employ two reinforced rifle battalions abreast. Each reinforced battalion does not physically occupy its entire defense area but retains responsibility for the area with contact from right to left. Gaps between battalion defense areas may be as much as 2,000 yards. Although the battalion defense area is the basis of the defense organization, company size strong points may be established and provision made for their withdrawal into rifle battalion defense areas if necessary.

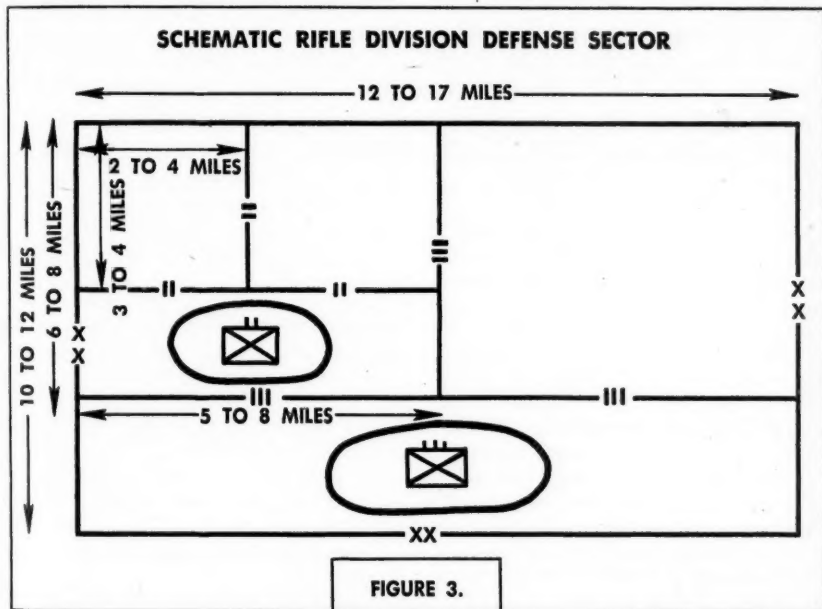
If it is believed that the enemy will fire an atomic preparation on the forward elements of the main defense zone, the troops in that area may be withdrawn temporarily on the authority of the rifle army commander. When this is done, well-entrenched detachments are left in place to maintain contact and give warning in the event the enemy attacks without prior use of atomic weapons. The defense position is, of course, reoccupied at the earliest practicable moment. Should a unit be subjected to an atomic attack, the survivors continue the defense until properly relieved. Care of casualties is subordinated to continuation of the defense. Reserves from adjacent units may be used to counterattack from the flank the enemy forces attacking through the gap created by atomic weapons. During all defensive operations maintenance of close contact is stressed. All units are alert for any signs of enemy withdrawals as indications of a forthcoming enemy atomic attack. Close contact with the enemy is considered excellent protection from atomic attack.

Major counterattacks are executed primarily by mechanized and tank units under control of either the rifle corps or the rifle army. Contaminated areas are traversed rapidly. Greater risks are accepted, if necessary, to ensure reduction of serious penetrations. In the preparation of counterattack plans, continued use is made of cul-de-sac tactics. Counterattacks against deep and wide penetrations may

be favorable, to force the enemy to mass and present a remunerative atomic target. In withdrawal operations small-yield atomic weapons may be used to help disengage forces and prepositioned weapons also may be employed.

Other Operations

In an atomic situation Aggressor will exert every effort to effect a hasty river



be executed in conjunction with atomic attacks and small-scale airborne assaults. If airborne units are employed, they are dropped on the enemy side of the area subjected to atomic attack, as a vertical enveloping force, to seal off the penetration and to facilitate restoration of the defensive area.

There are a few significant changes in the conduct of the Aggressor mobile defense or delaying action. The length of delay in any one position may be increased, if the terrain and balance of forces

crossing. In critical areas atomic weapons may be used extensively to facilitate an otherwise impossible hasty crossing. Depending on the terrain, an initial regimental bridgehead of 1 to 3 miles is considered adequate. Priority targets for atomic attack in a hasty crossing are enemy forces covering the crossing site and the reserves of those forces. In a deliberate crossing, concentration areas are 2 to 4 times as far from the river as in a nonatomic situation. More crossings are made on a wider front in order to keep

the number of remunerative atomic targets to the minimum.

Aggressor endeavors to avoid large-scale offensive operations in mountain areas. In defensive operations atomic weapons are used to block major avenues of approach. Use of prepositioned weapons is favored because of delivery accuracy and relative ease in achieving maximum effects.

Planning for the attack of a fortified area is unchanged except complete plans are made for the employment of atomic weapons to create breaches in the fortified areas.

Atomic weapons increase the importance of small airborne units in offensive and defensive operations. Large-scale airborne operations require much larger airheads. Small airborne units are used to seize or disrupt atomic delivery means, operating in conjunction with partisan units, when possible. In the defense, airborne units may provide a vertical enveloping counterattack force in conjunction with atomic weapons. In larger airborne operations several assaults are made and the more successful of these are reinforced and merged into one airhead if adequate dispersion can be maintained.

Partisan operations, facilitated by the dispersion of installations and units in an atomic situation, assist in locating and disrupting enemy atomic delivery means and locating atomic targets.

The proposed Aggressor atomic doctrine can best be summarized by listing the major assumptions employed in its development.

Basis for Doctrine

The fundamentals of Aggressor's offense and defense are modified only to take advantage of the effects of atomic weapons.

In the atomic offense Aggressor continues to make his main effort by massing on a narrow front. However, this narrow front is now up to twice as wide for division and higher formations in order to ensure adequate dispersion and maneuver space.

The rapid offensive is stressed under atomic conditions with an average daily advance of about 25 miles as the goal. Subordinate commanders are given greater latitude in tactical decisions in the conduct of such offensives.

Because of the mass destruction effects of atomic weapons, the number of echelons in the attack formation is usually reduced from three to two.

The "armored offensive" or variants are employed wherever possible. Mechanized units are employed as early as possible.

The employment of the decentralized defense is favored. The rifle division can now defend and hold a wider and deeper sector.

The defense is characterized by greater reserves and increased depth. Usually the reserves in all combat components of the rifle army are at least one-third of the force.

Aggressor stresses maximum passive and active protection against atomic weapons. However, rapid accomplishment of the assigned mission remains paramount.

Correction—The legend accompanying the map on page 17 of the August 1956 issue of *MILITARY REVIEW* incorrectly refers to Cape Horn. The legend should read Cape of Good Hope.

PRIDE OF REGIMENT

Major Reginald Hargreaves, *British Army, Retired*

The views expressed in this article are the author's and are not necessarily those of the Department of the Army or the Command and General Staff College.—The Editor.

FOR one who has been privileged to serve as an officer in the British Army, it was a matter of particular interest to read a tribute to the British regimental system paid by two authors writing in a recent issue of *Army*. It was, moreover, impossible for one moderately well-acquainted with the organization of the United States ground forces to dissent in the writers' contention that many of the elements peculiar to the British regimental system could be assimilated by American infantry units to their ultimate advantage.

For as *Army's* contributors sagely pointed out, the need for flexibility of organization embodied in the tactical demands of a fluid, fast-moving war of dispersion may well render the existent United States regimental formations far too cumbersome and unwieldy. If such proved to be the case, the required combat command probably would not exceed battalion strength—plus supporting arms. The problem, then, is to devise some means of imbuing the battalion with the independence and self-reliance, the feeling of being a fully integrated, corporate entity capable of conducting an operation, as it were, under its own steam, more usually

associated with what in America is termed a regimental command, and in Great Britain a brigade command.

Unquestionably, the answer would seem to lie in organizing and rating the battalion as a regiment in the British sense of the term, where the brigade is an entirely ephemeral structure, without particular tradition or even sustained continuity of existence. Made up of 2, 3, or 4 battalions, as circumstances demand, the British brigade formation both coordinates and exercises command over the units of which it is composed. The fact that these selfsame units can be changed about and transferred, if necessary, from one brigade to another in no way affects their individual *esprit de corps*, for their fealty is primarily to their own regimental traditions which, being pooled when they come under brigade command, constitute for the time being the *mystique* of the brigade itself.

The strength of the British regiment—1, 2, or, very rarely, 3 battalions—lies in the fact that its traditions are deeply rooted in a definite regional area, a hometown, where it has its permanent depot, its museum full of trophies of past activities, its collection of officers' and noncommissioned officers' mess plate, and its strong local affiliations and associations. In most instances its home is to be found in the capital of the county after which it is named and from which it draws the majority of its long-service recruits. Winchester is the capital of Hampshire, for

The strength of the British regiment lies in the fact that its traditions are very deeply rooted in a definite regional area, a hometown, where it has scores of strong local links, affiliations, and associations

example, and in Winchester will be found the depot of the 37th Regiment of Foot, or Royal Hampshire Regiment, with its War Memorial in the Cathedral precincts, its commemorative tablets on the Cathedral walls, its Old Comrades' (veterans) Association quarters in a nearby street, and its scores of other links with the neighborhood which serve to identify it with, and bind it to, the place that officer



Royal Hampshire Regiment

and man soon learns to look upon as his lifelong military habitat.

To Winchester come all the "johnny-raws" (recruits) for the Hampshire Tigers; and while undergoing recruit training at the depot they imbibe the story and traditions of a regiment that came into being in 1702, and into which, it is clearly indicated, they can regard it a privilege to have been accepted.

From that selfsame depot, their days of "square-bashing" (foot drill on the barrack's square) over, they are drafted

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either to the battalion held in strategic reserve in England, or to that serving overseas. And by that time, so intensive has been the indoctrination to which they have been subjected, they would not exchange service with "the Tigers" for life with any other formation under the sun.

Local Patriotism

In the days of an entirely voluntary army this intense local patriotism was perfectly understandable since, in all probability, the recruit had been born and bred in the county in whose regiment he enlisted. Even, with the far wider sweep of conscripted service, the draftee is sent to the local regiment whose roots are deeply embedded in that part of the world from which he himself derives.

All this, of course, is not the outcome of mere accident. It originates in local practice reaching back over the ages and in methods of recruitment that were in operation as long ago as the days of medieval knight service.

In those far-off times all land tenure was based upon the tenant's liability for military service in time of war. Called upon to take the field, the local magnate would be accompanied by a band of tenant-followers from his own lands, all known to one another, all sharing similar predilections and prejudices, and all quietly but unshakably convinced that they constituted about the best combat team in the entire outfit. With no more uniform than a few bits of protective armor of their own providing, they were proud to sport a badge derived from their leader's armorial bearings. Even in this particular there has been a strong and wonderfully stimulating sense of continuity, for the badge of the present-day Hampshire Tiger includes the red rose embroidered on the tunics of the Hampshire bowmen who won the day at the Battle of Crécy in 1346.

For further example of this tremendous sense of kinship with the glories of the past one has only to examine the history

of the 11th Hussars, to name no other regiment. Starting their military career in 1715, they were raised in Essex and trained as Dragoons by Brigadier General Philip Honeywood. In 1840 the corps exchanged Dragoon for Hussar dress, being renamed the 11th, Prince Albert's Own Hussars, in honor of Queen Victoria's consort. One of the first regiments to progress from horse to vehicle in the midtwenties, as an armored car formation they still proudly sport the badge of the Sphinx, won in a cavalry action fought in Egypt in 1801; while they continue to regard their home county of Essex as the most fruitful source of likely recruits.

Method of Recruitment

With the inauguration of the British Standing Army in 1660, the method of recruitment followed much the same pattern as that found satisfactory in the past. The Royal Warrant to embody a new regiment was bestowed upon some individual of local prestige and position, and it was to the men of his own territorial region that he made his appeal to fill the ranks. Commissions would be purchased—for these were the days of "purchase"—by friends or the sons of friends; men who in their turn could rely upon the existence of a certain number of personal adherents who would follow them and make good any shortages.

When the Scottish Highland regiments were organized, recruiting became almost a family affair, so closely knit were the respective clans. One influential laird went around his estate offering his snuff-box to every likely looking lad he met; the inference being that acceptance of a pinch implied readiness to enlist in his lordship's newly nominated regiment. The alluring Jean, Duchess of Gordon, went one better by offering to seal the new recruit's acceptance of the "King's shilling" with a kiss. With this added attraction, the ranks of the "Gay Gordons" were filled within a week.

Not only were, and are, the Highland regiments extremely clannish, but they were, and remain, remarkably exclusive. For reconcile political and abiding social reasons, a "Black Campbell" would no more seek to enlist in the Cameron Highlanders than the average American would think of taking service in the French Infantry of the Line. To a Campbell the Cameron country is not his country, nor the Cameron clan his clan; although he would take it as a matter of course to be brigaded with a Cameron battalion in time of war.

At times the demands of a tremendously expanding army forced the authorities to resort to that dubious device of offering free commissions to individuals who guaranteed to bring in a certain number of



Gordon Highlanders

recruits—"raising men for rank," as the process was termed. It was a procedure that was also followed in the United States, both at the outset of the War of Independence and at the beginning of the Civil War.

In neither country can it be said that this method of securing recruits proved entirely satisfactory. Personal popularity may bring in an encouraging quota of men, but it is no criterion of the military ability of the individual who enjoys it. All too often the professional qualities of this type of officer were found to be in inverse ratio to the esteem in which he was held by those he had persuaded to enroll. So far as the mere careerist and rank-snatcher was concerned, in an unscrupulous attempt

to swell the numbers he brought to the colors he had no hesitation in resorting to crimps or the more shady type of lodging-house keeper, indifferent to the quality of the recruits he attested so long as the quantity was sufficient to ensure the award of a commission "without purchase." Indeed, no man did the army greater disservice or wrought greater mischief on its morale. Fortunately, his prompt disappearance, together with that of the scruffy scalawags he had enrolled, was among the blessings that peace brought automatically in its train.

There was little or no skulduggery involved, however, in the recruitment of the regiments on the permanent establishment. With their firmly entrenched home ties and local associations and their cherished nicknames, each fresh campaign added to their laurels and to the store of tradition on which their corporate, almost tribal *esprit de corps* was founded. They were, in general, proud of being in the army *because* it was their particular pride to be a "Cherry-picker" (11th, Prince Albert's Own Hussars); a "Scarlet

itates against fealty to the army as a whole. On the contrary, the greater loyalty encompasses and intensifies the lesser, to the mutual benefit of both. It is, of course, encouraged and "played up" by every conceivable means. Talks on regimental history and lectures on past victories and hard-fought reverses form a conspicuous part of the recruit's normal training, un-



Royal Northumberland Fusiliers

til he becomes fairly soaked in the lore and legend of the regiment—and the particular battalion of it—in which he has enrolled. As a further stimulus to emulation, no outstanding event in the formation's past record is allowed to pass without a commemorative ceremony.

Commemorative Ceremonies

Thus wherever they may be the six "Minden regiments" ceremonially parade each year on 1 August, with their headdress adorned with roses, in sober celebration of their predecessors' astounding victory over the French at Minden Heath in 1759. The line of advance of the British Infantry took them through certain village rose gardens, where they gaily plucked the dew-laden blossoms to adorn their tricorne hats and musket barrels. With equal punctilio the Royal Northumberland Fusiliers commemorate their Patron Saint's day—their badge is St. George and the Dragon—by a ceremonial Trooping of the Color, a luncheon for friends of the regiment, and a rally of old comrades. St. David's day is celebrated with equal en-



Royal Horse Artillery

Lancer" (16th, the Queen's Own Lancers); a "Horse-gunner" (Royal Horse Artillery); a "Diehard" (the Duke of Cambridge's Own (Middlesex Regiment)); a "Shiner" (the Northumberland Fusiliers); or a "Greenjacket" (the 60th, the King's Royal Rifle Corps and the Rifle Brigade).

It goes without saying that this intense localized pride of regiment in no way mil-

thusiasm on 1 March by the Royal Welch Fusiliers, the program of events ending with a banquet at which the regimental goat, with horns gilded and further adorned with a circlet of flowers, is led around the mess table three times by the goat major, the noncommissioned officer who has the animal in his special charge.

In precisely the same spirit, when the civic authorities of a county capital confer the honor of "the freedom of the city" on the county regiment—a further link between the soldier and the people of his hometown—the battalion in residence will parade ceremonially through the streets "with drums beating, flags flying, and bayonets fixed." Normally, it is an unforgivable affront for any military formation to march through any city or town with unsheathed colors, beating drums, and fixed bayonets. This intimate and highly prized recognition of its locally raised fighting force by the civil power is not easily won nor lightly bestowed. The city of London, for example, has conferred the distinction on six regiments only in all its long history.

All these treasured privileges and cherished traditions, kept alive and vivid by oral transmission and ceremonial commemoration, consolidate in a tremendous regimental *mystique* in which every officer and man feels that he shares personally and on equal terms. Moreover, the influence exerted on "hostilities only" members, who served with a battalion only during a war, rejoicing in a strong, inspiring regimental spirit and tradition is as astounding as it is immeasurably valuable.

There is a well-authenticated story of a body of men who enlisted or were drafted in 1939 into the 2d Battalion of a regiment we will agree to refer to as the Rutlandshire Fusiliers. As part of their training they were well and truly indoctrinated in all the regimental lore; and by the time they were judged fit for over-

seas service no more loyal or enthusiastic Rutlandshires ever shouldered a rifle.

Suddenly an order came for a draft of 150 of them to proceed to North Africa as reinforcements. As it was well-known that the 1st Battalion was operating in that theater, the men were well-content that they should be departing overseas to bring it up to strength.

What was their consternation, on arrival in Egypt, to find themselves posted to the Loamshires, a regiment of which they knew nothing and cared less. Language was as sultry as the climate and in many instances not far removed from the outright mutinous. But British soldiers do not rebel easily, and the draft proceeded up the line to join the unregarded Loamshires who greeted these strangers within the fold with as little enthusiasm as the newcomers displayed for the fate that had been meted out to them.

It was on this uneasy note that matters rested for the next 3 days. On the morning of the fourth day, however, the unhappy Rutlands heard that their 1st Battalion was encamped a mere 3 miles away across the desert.

As dusk began to fall that evening, a keen observer might have noted a great deal of surreptitious stir about the Loamshire camp, with many whispered confabulations and much unostentatious hurrying to and fro; all of which, however, was confined to that corner of the bivouac which the Rutlandshire contingent had made its own. But nothing transpired to attract official attention, and the camp settled down equably enough for the night.

It was not until early morning rollcall that the discovery was made that the entire detachment of Rutlandshire Fusiliers had vanished. Wild thoughts of mass desertion in the face of the enemy whirled through the Loamshire adjutant's bewildered head as he grabbed the telephone to try and trace the missing men. But inquiry soon elicited the fact that the only

desertion of which the men had been guilty was that involved in transferring themselves enbloc to the 1st Rutlandshires 3 miles away across the desert.

Adventitious and entirely unpremeditated in its origin as it may have been, the British regimental system of building up morale and *esprit de corps* has rarely paid higher dividends than during those "operations of detachment" of which the British Army has had such liberal experience. In England's innumerable "brush fire" military activities the work often has been left for a single battalion to carry through entirely on its own.

The need then was for complete self-reliance, assurance, and resource, if a clean, workmanlike job was to be accomplished with nobody, so to speak, to hold the regiment's hand. In such circumstances all ranks were keenly aware of the fact that not only were they operating under the stern eye of authority, but that the equally critical gaze of friends and critics in their hometown also was bent upon them. At all costs, *their* faith in the regiment they had encouraged and indulged must be maintained. It was unthinkable that they should return to those familiar streets and the well-wishers in the snug, friendly "pubs" with the stigma of defeat besmirching a hitherto unsullied record. In the outcome the entire army reaped enormous profit by virtue of the regiment's own personal urge for self-vindication.

Experiment

The proof of the pudding is in the eating—or in the indigestion it occasions. At one period during the late forties the experiment was tried of organizing brigade groups—say, of the Lincolnshire, Staffordshire, and Yorkshire Regiments—to which draftees could be assigned irrespective of the formation in which they had enrolled. Thus a lad who had been sent to the Lincolnshire Poachers, after recruit training and thorough indoctrination

in that regiment's admirable record and traditions, might easily find himself finally assigned to the "Green Howards" from Yorkshire, of whom he knew nothing. Away went his shoulder titles and his treasured cap badge of the Sphinx, and with them vanished that enheartening sense of complete identification with a particular fighting formation which his entire military education had been designed to bring about. His new unit was no more than a name to him; the army as a living entity, an organism with a soul of its own, was a concept too big for him to grasp fully.

The regiment, *his* regiment, had been something he could envisage, something concrete and human it had been possible for him to get properly in focus. Bereaved of his links with it, his connection with its background and associations violently sundered, it was demanded of him that he should perform the virtually impossible feat of transferring his loyalties to a unit he knew nothing about, or to a vast, intricate amorphism—the army *per se*—whose immensity completely outranged his faculty of comprehension. In the circumstances he inevitably found himself psychologically and spiritually adrift—rootless and unintegrated. As the outcome of a piece of dehumanized pedantry in a staff office, a potentially good soldier has declined into just another disgruntled conscript.

Needless to say the experiment was a disastrous failure and had to be revised drastically.

Close affinity with the regiment, based upon regional sentiment, community of interests, and local loyalties, is, of course, easier to achieve in a small country like Great Britain than in a vast territory such as the United States. Moreover, the average American is far more peripatetic than the preternaturally stay-at-home Briton who is far more likely to end his days within 10 miles of the spot where he

was born than is the citizen of the United States, tempted into restlessness by his homeland's beckoning magnitude.

Yet it should not be beyond the mind of man to devise a scheme whereby the American enlisted man or draftee would perform his military training, both active and reserve, in a unit with which he possessed definite kinship. Naturally, this implies enlistment in, or assignment to, a specific battalion (British regiment) with a definite, fixed military home. This "home in the army" would serve not only as a training ground for all the recruits passing into the active formation—overseas or in some camp of maneuver in the homeland—but also as a rallying-point for reservists and a port of call for old comrades. In addition, it would act as the repository for all those treasured relics of past service which do so much to foster pride of regiment and keep alive the traditions and fighting spirit founded by those stalwarts who have gone before.

Regimental Insignia

There is another aspect of the problem which is deserving of the most careful and unprejudiced attention—the question of regimental insignia and distinctions over which there still seems to exist considerable scope for an imaginative approach.

"Men are still lead by baubles," Napoleon once pronounced. It is true that a visible symbol with which a man can identify himself, personally remains one of the best means of focusing loyalty that the wit of man has yet devised, for differentiation is often the parent of a healthy pride. Only one regiment in the British Army, for example, is entitled to wear a cap badge both back and front on its headdress. This is the Gloucestershire Regiment which earned the distinction in Egypt in 1801 when, with its front rank fully engaged, its rear rank smartly turned about to deal with a sudden attack by French cavalry from the rear. Inciden-

tally, by a queer coincidence, a battalion of the Gloucesters found themselves in a similar situation during the war of 1914-18. Inspired by the memory of their pred-



Gloucestershire Regiment

ecessors in Egypt, the Gloucester lads once more turned back to back to deal with a stubborn foe; and once again the enemy was doubly repulsed.

Ask any member of the Royal Scots Greys to explain why the badge on his headdress is a French "Eagle," and in all probability he will reply, "Oh, we got that at Waterloo." There is a tremendous and



Royal Scots Greys (2d Dragoons)

absolutely invaluable sense of continuity and "belonging" in the instinctive use of that timeless "we."

Again, the Royal Welch Fusiliers commemorate one of the most blissful moments in the British soldier's history by deliberately drawing attention to the manner in which they ignored it. Until 1804 the bugbear of the fighting man's day-to-day existence had been the particular style

of hairdressing imposed upon him by the authorities. Grown long and drawn back tightly over the cranium, the hair was first plaited into a queue, then plastered with foul-smelling tallow and soap, and then thickly powdered with flour. With his skull crowned with this rancid mess, "it was no uncommon circumstance," as one sufferer recorded, "when on the guard bench and asleep, to have the rats and mice scampering about our heads, eating the filthy stuff with which our hair was bedaubed." Great was the sigh of relief, therefore, when the order was promulgated that henceforth the soldier's hair was to be cut short and left unpowdered. At the time, however, "the Nanny-goats," or Royal Welch, were on active service on the other side of the world and the order never reached them.

Returning to England in 1803, they still sported the queue and powdered locks. Naturally they lost no time in conforming to an order that chimed so perfectly with their own inclinations. But in commemoration of the fact that they were the last regiment of British Foot to parade in hair powder and dangling queue, to this day they wear a "flash" on the back of the tunic collar—a bow of broad black silk ribbon, with long ends, symbolizing the pad once worn to prevent the grease from the queue staining the back of the scarlet jacket.

Childish? Well, maybe, but it is a cause of much pride to those distinguished by this particular symbol. It is something "different," as were the shield with anchor and cannon crossed of Burnside's 9th, the Maltese cross of the 5th, the cloverleaf of the 2d, the Greek cross of the 6th, the acorn of the 14th, the 5-pointed star of the 20th, the cartridge box of the 15th, and the arrow of the 17th, adopted as corps insignia by the appropriate authori-

ties in the War Between the States.

Useful as these were as a stimulant to localized pride and loyalty, they were, after all, the symbols of large formations and, therefore, a little lacking in the intimacy and personal quality of regimental badges.

It is the same with the insignia which denote the different branches of the service. The crossed rifles of the Infantry and the crossed sabers of the Cavalry are well enough, and the members of each arm should be proud to wear them. But in addition there might be some regional or traditional badge—like the globe and anchor of the Marines—particular to each individual regiment, peculiarly its own, and in whose characteristics its members could take legitimate pride.

Conclusions

For in view of the probable shape of military things to come, the moment undoubtedly has arrived to foster pride of regiment by every possible means, since it would appear to be a moral certainty that the warfare of the future, so far as land forces are concerned, will be founded on the battalion. It will fight either as a unit working in cooperation with similar outfits under over-all brigade or divisional command, or—much more probably—as a "lone wolf" functioning in virtual isolation, and immediately responsible only to itself for the successful prosecution of the operations with which it has been entrusted.

Anything that can be done, therefore, to strengthen the team or "family" spirit, the mutual confidence, and prideful self-reliance which is a fighting formation's most priceless asset, will more than repay the effort demanded for its cultivation, when "the air is all a yell and the earth is all a flame," and the chips are down.

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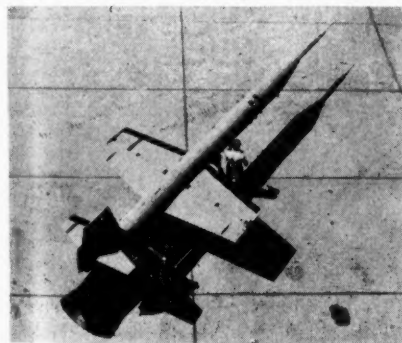
MILITARY NOTES

AROUND THE WORLD

UNITED STATES

Ramjet Rocket

The X-7 supersonic rocket is currently in use in the development of Air Force ramjet missiles. Although exact charac-



The Air Force's ramjet X-7.

teristics of the X-7 have not been released, in secret operations during the past several years the needle-nose vehicle has traveled through the stratosphere under ramjet power at speeds well beyond the speed of sound. Launched from a B-29, a rocket motor drives the X-7 up to a speed at which the ramjet can efficiently take over. Ramjet engines are comparatively simple devices that give tremendous power at high speeds. Unlike conventional jet engines, the ramjets or "flying stovepipes" need no compressors or other moving parts

and depend upon their own high speed to compress their air intake. The faster they go, the better they operate, and they are not hampered by such factors as compressor speeds and heat which limit conventional jets.—News release.

Smallest Air Force Jet

The T-37 is the smallest jet aircraft now in production for the Air Force. Powered by two J69 jet engines of 920-pounds thrust each, the tiny trainer is in the 400-mile an hour class. The engines are mounted with air inlet and jet exit in



Tiny T-37 is dwarfed by B-52.

thickened wing roots. It carries a student and an instructor side by side, has a range of 345 miles, and weighs 6,100 pounds fully loaded.—News release.

Carrier-Based Attack Bomber

The Navy's *A3D Skywarrior*, twin-jet attack bomber, is said to be able to fly faster and farther with a greater striking load than any other airplane of its weight and size. Designed to perform from aircraft carriers or land bases, the *Skywarrior* is in the 600- to 700-mile an hour class and will operate above 40,000 feet on



Navy's *A3D Skywarrior*.

combat missions. Powered by two *J-57* engines producing over 20,000 total pounds of thrust, it is the first swept-wing jet attack bomber produced for the Navy. In a recent test flight without refueling the *A3D* averaged 570 miles an hour on a 3,200-mile nonstop trip.—News release.

Supersonic Bomber

The triangular-wing *B-58 Hustler*, designed to fly faster than sound, will begin test flights soon. The *Hustler*, a 4-engine medium bomber which may attain speeds of 900 to 1,000 miles an hour, is designed to carry and launch guided missiles while far from targets.—News release.

Speed Records

The *XV-1* (MILITARY REVIEW, Apr 1954, p 65 and Sep 1955, p 63), the world's first successful convertiplane, has reached a speed of 200 miles an hour in recent tests—a new speed record for helicopters. The versatile *XV-1* uses a helicopter rotor, a conventional aircraft piston engine, pusher type propeller, and short airplane wings. Pressure jet engines located at the tip of each rotor blade provide power for heli-

copter flight. When the forward speed of the craft exceeds the stalling speed of the conventional wings, power is shifted from rotor to pusher propeller to execute a "flight conversion" and the helicopter rotor is allowed to "windmill." Recent records for conventional helicopters on closed-circuit courses were established by the *H-34* helicopter and include 141.9 miles an hour for the 100-kilometer course, 136 miles for the 500-kilometer course, and 132.6 miles for the 1,000-kilometer course.—News release.

Turbine-Powered Helicopter

Experiments are being conducted with the installation of *T-58* gas engines in standard *H-21C* helicopters. The *H-21C* (MILITARY REVIEW, Mar 1955, p 64 and May 1955, p 65), now in large-scale production, is a 22-place tandem rotor trans-



Gas turbine helicopter installation.

port and is powered by a 1,425-horsepower reciprocating engine. The *T-58* gas turbine is smaller than a conventional automobile engine but much more powerful. Two of them will provide 40 percent more power but take up less space than the *R-1820-103* engine which currently powers the helicopter. The new powerplant is expected to increase the speed of the *H-21C* by 50 miles an hour, double the ton-miles per hour capability, and raise the hovering ceiling by several thousand feet. Vibration and noise levels will be considerably reduced. Further advantages of the system are in the increased re-

liability of the multiengine power source, and in the fact that gas turbines do not require an extended warmup period.—News release.

Balloon Rockets

The United States Navy is using balloon-supported rockets to investigate the effect of solar disturbances on radio communications. The rockets are carried aloft by plastic balloons 68 feet in diameter, and are fired by a radio signal when a solar storm or "flare" is observed. The 12-foot-long rocket then rises to an altitude of 60 to 70 miles. The 20-pound instrument payload of the rocket radios back to the observation station the strength of X-ray and ultraviolet radiations from the solar disturbances. Ten of the rocket-balloon combinations or *Rockoons* were planned for launching from the *USS Colonial (LSD-18)* in the Pacific area as part of the United States participation in the 1957-58 International Geophysical Year.—News release.

Helmet Radio

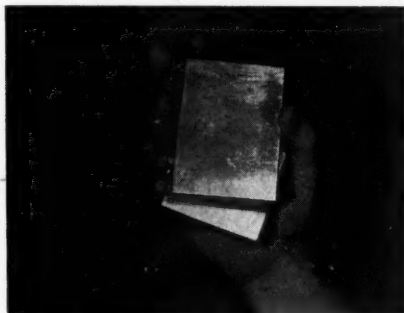
A helmet radio now undergoing exhaustive tests is designed to permit direct radio communication between individual



Infantryman's 2-way helmet radio.

soldiers. The experimental helmet completely contains the 2-way radio which weighs less than a pound. Use of transistors permits the set to be made smaller than two cigarette packs. The helmet

communicator can be preset for short-range conversation between squad members or reach other radios up to a mile away by utilizing an auxiliary antenna attached to the top of the helmet. The combat FM set can operate continuously



Helmet radio components.

for half a day on a single set of batteries, requires no "warmup" time, and can net with standard army radios. The helmet in which it is mounted is made of synthetic material which is said to protect the wearer's head as effectively as steel.—News release.

Mammoth Vacuum Cleaners

The Air Force is developing mammoth vacuum cleaners to clean the surface of its runways according to a report. The machine is said to be capable of cleaning a million square feet of runway an hour while traveling at a speed of 20 miles. It is expected that the use of this equipment will help reduce damage to jet engines from foreign objects on airfield pavement surfaces.—News release.

Rocket Plane Speed Mark

The Air Force X-2 (*MILITARY REVIEW*, Oct 1955, p 69 and Nov 1955, p 66) has set a new unofficial world speed record for airplanes of 1,900 miles an hour. The multimillion-dollar X-2 carries a quarter of a ton of instruments to measure temperatures, fuel consumption, and the stresses and strains of extremely high

speeds. Designed to explore the "thermal barrier," it is made chiefly of stainless steel and nickel alloy. The research rocket plane has attained an altitude of 90,000 feet, and in setting the speed record of almost three times the speed of sound did not use the maximum power of its rocket engine.—News release.

Streamlined Flying Boom

The *KC-135* jet tanker-transport is equipped with a streamlined flying boom. It will be used in the refueling of *B-52* heavy bombers and new jet fighters at jet speeds and high altitudes. The *KC-135*



Flying boom and antenna of the *KC-135*.

also features a probe like, high frequency radio antenna mounted on top of the vertical tail fin. An advanced version of the 707 prototype, the *KC-135*, will eventually replace the *KC-97* as the Air Force's standard refueling tanker.—News release.

Jet Thrust Reverser

Landing runs of jet planes may be reduced by as much as 50 percent by use of a newly developed jet "thrust reverser." In this device the normal flow of gases through the tailpipe is deflected through

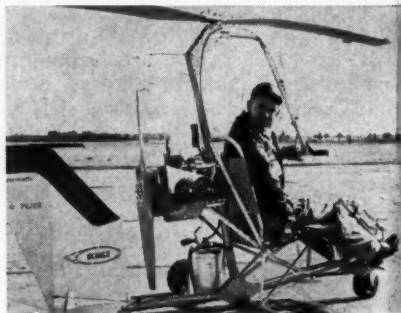
exhaust vanes in a forward direction, permitting the pilots to arrest the forward speed of their jet craft and land on runways now considered too short for safe operation.—News release.

Helicopter Carrier

The helicopter carrier *Thetis Bay*, a converted 10,400-ton convoy escort carrier, has joined the Pacific Fleet. Designated the *CVHA-1*, the vessel is equipped with 20 troop-carrying helicopters and is capable of carrying a regiment of marines and landing them on or behind a fortified beachhead. The helicopters will also be used for supply and medical evacuation. The cost of the conversion of the *Thetis Bay* to helicopter operation was approximately 8 million dollars.—News release.

Light Gyrocopter

The *B-7M Gyrocopter* combines some of the features of the modern helicopter and the autogyro. Capable of carrying a 250-



B-7M Gyrocopter.

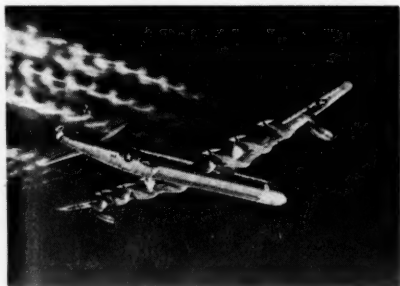
pound load to an estimated ceiling of 12,000 feet, the *Gyrocopter* is safe and easy to operate, having only a main control stick, rudder pedals, and a throttle for its controls. It has a range of 120 miles and a cruising speed of 60 miles an hour. Although it cannot hover, it can maintain a level flight speed of 19 miles an hour and can land or take off from an area of 100 square feet.—News release.

Manned Research Balloons

Personnel-carrying free balloons are in use by the Air Force in low-level meteorological research, and the Navy is conducting high-level altitude research with the same type of aerial vehicle. The Air Force balloons carry instruments to measure air currents, temperature, humidity, and cloud formations. A Navy balloon has reached an altitude of 40,000 feet in a 4-hour, 250-mile flight. During the flight which was made by two passengers in an open basket temperatures reached 60 degrees below zero.—News release.

Nuclear Test Airplane

A *NB-36H* intercontinental bomber has been revealed as the world's first aircraft to fly with an operating atomic reactor aboard. The airborne nuclear reactor is



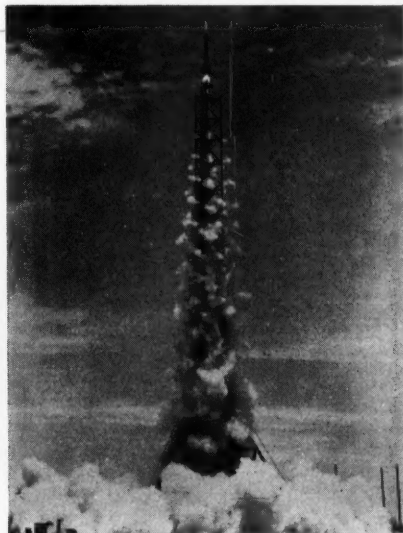
NB-36H on nuclear test flight.

being used to carry out research leading to the development of an atomic-powered airplane. The low-powered reactor does not power the *NB-36H* and is not turned on until the 10-engine plane is high over an unpopulated area. A wide variety of data on airborne nuclear reactor operation is obtained, to include the effect of radiation upon instruments, equipment, personnel, and air frame. The huge vertical tail of the nuclear test plane is marked with an orange radiation symbol to distinguish it from all others of its type. Special air-scoops on each side of the fuselage behind the wing cool the reactor when it

is operating. The *NB-36H* is powered by six 3,800-horsepower piston engines which turn pusher propellers, and four *J-47* turbojets.—News release.

Improved Rocket

In its recent record-breaking flight to 163 miles above the earth's surface the *Aerobee-Hi* (MILITARY REVIEW, Jul 1955, p 64 and Sep 1956, p 70) carried a load of 135 pounds of radio devices. The primary purpose of this radio equipment was to



Aerobee-Hi leaving launcher.

measure various characteristics of the ionosphere, that part of the earth's atmosphere which begins at an altitude of 35 miles. The improved *Aerobee-Hi* is in use by all the agencies participating in the upper air research program of the Department of Defense.—News release.

Navy's Fastest Fighter

The Navy's *F8U-1 Crusader* (MILITARY REVIEW, Dec 1955, p 65) operates at a speed well beyond 1,000 miles an hour. Powered by an afterburner-equipped *J-57*

turbojet engine, the swept-wing fighter features a 2-position incidence wing which enables it to operate not only at supersonic speeds but also at the comparatively low speeds required for carrier-based operations. The wing is hinged at the rear and raises in front for takeoffs and landings. Another advantage of the 2-position wing is that an extremely short landing gear can be used, thereby saving weight and making the compartments of the plane readily accessible for maintenance and servicing between flights. It also



Crusader has 2-position wing.

permits the use of a low-drag, smoothly faired cockpit without sacrificing visibility. When the wing is in its elevated position, landings can be made with the fuselage almost parallel with the flight deck, whereas most of today's high-performance aircraft must come in for a landing at a high angle of attack. The *Crusader's* thin wing is mounted high and set well back from the cockpit, and the horizontal tail surface is joined low on the fuselage. Titanium is employed in the plane's aftersection and midsection to save weight, and a simplified 30-pound ejection seat is used.—News release.

WEST GERMANY

Submarine Salvaged

West Germany's new navy has recovered a second U-boat from the North Sea where it was scuttled by its crew at the end of World War II (MILITARY REVIEW,

Aug 1956, p 68). The submarine, designated the *U-2367*, which will be refitted and put back in service was one of the most modern in the Nazi Fleet and was equipped with snorkel apparatus. It appeared to be little harmed by its 11-year immersion in 60 feet of water. Another submarine, the *U-2365*, was previously retrieved.—News release.

Army Strength

West Germany will reach her goal of 96,000 men under arms by the end of 1956 according to the Defense Ministry. The report indicated that a probable strength of the army at the end of 1957 will be 210,000. Under present plans, the first draft under the recently approved military conscription bill will be made in October and between 100,000 and 200,000 will be inducted in the spring of 1957.—News release.

DENMARK

Atomic Reactor Project

The United States Government will contribute \$350,000 toward the cost of an atomic reactor which the Danish Atomic Energy Commission plans to erect at Risoe, Denmark. Nuclear fuel for the reactor will be furnished by the United States under a new pact which amends and extends the 1955 "atoms for peace" agreement between the two nations.—News release.

INDIA

Enters Atomic Age

India's first atomic reactor is now in operation on Trombay Island, 13 miles from Bombay. It is the first atomic reactor to be set up in Asia. A second reactor (MILITARY REVIEW, Aug 1956, p 72) to be provided by Canada under the Colombo Plan will be set up on the same island and is expected to be in operation by 1958. India has vast potential supplies of atomic fuel to include what is estimated to be the largest thorium de-

posit in the world. Two factories are now in operation producing atomic fuel and two other plants for this purpose are now under construction. Foreign countries offering help to India in entering the atomic field include the United States which will furnish 21 tons of heavy water for use in the second reactor, Canada, Great Britain, France, and the Soviet Union. Additionally, Norway and Sweden are cooperating informally with India on nuclear developments.—News release.

To Purchase Carrier

An aircraft carrier will be purchased for the Indian Navy according to a recent official announcement. Details as to the type of carrier and the source from which it will be procured have not been released.—News release.

SOUTH KOREA

Air Wing Moves to Japan

The United States First Marine Air Wing has moved from Pohang, Korea to Iwakuni, Japan terminating 6 years of service in Korea. The Pohang base will be used as an amphibious training camp for South Korean marines. During the Korean conflict, the air wing flew 118,000 combat sorties.—News release.

THE NETHERLANDS

United States Atom Aid

In an agreement with the Netherlandic Government, the United States has agreed to contribute \$350,000 to the construction of a 2 million-dollar experimental atomic reactor in the Netherlands. The United States will also furnish the fissionable material for the reactor.—News release.

FRANCE

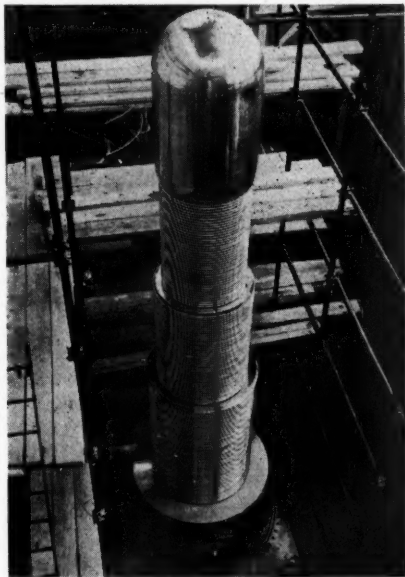
All-Purpose Aircraft

The *Sipa 1100*, now under development, is a high-wing aircraft with a cockpit which will provide top visibility. It is powered by two 610-horsepower engines,

and can land and take off from small makeshift fields. The plane is specifically designed for overseas patrol duty.—News release.

Atomic Research

The *Saclay* nuclear research center, located between Chatillon and the valley of the Chevreuse, has been revealed as includ-



Saclay electrostatic generator.

ing an operational natural uranium pile with heavy water moderator and high neutron flux. An additional heavy water pile with neutron flux approximately 10 times greater is now under construction. The currently operational *Saclay* pile is cooled by a new process involving the circulation of carbon dioxide under pressure. In earlier reactors nitrogen gas was used as a cooling agent. Equipment of the *Saclay* installation includes a 5 million-volt *Van de Graff* type electrostatic generator and a 25 million electron-volt cyclotron.—News release.

Cable-Controlled Missile

The electrically controlled SS-10 air-to-ground missile (MILITARY REVIEW, Aug 1955, p 69) weighs 33 pounds and contains a high-explosive hollow charge in its 11-pound warhead. About 30 inches long and 4 inches in diameter, it can be launched directly from the case in which it is carried. The weapon has a minimum range of 450 yards, and can reach its maximum range of 1,660 yards in 18 seconds. The rocket rotates slowly in flight and its direction can be changed as much as 50 degrees by electrical impulses sent through the control cable. The cable is played out from a reel in the body of the rocket. The SS-10 attains a maximum speed of about 250 feet per second.—News release.

USSR

Lend-Lease Ships Sunk

The USSR has sunk 56 American lend-lease submarine chasers and PT boats with United States approval. The vessels were too derelict to be towed back to American ports. The vessels were sunk in the Arctic Ocean off Murmansk.—News release.

Solar Power

Soviet-Armenian scientists are drafting plans for a power station which will use the sun's rays for energy. The plans call for large rotating mirrors mounted on a 130-foot tower. The heat collected will be transmitted to a large boiler. The solar powerplant will be located near Mount Ararat which is in Soviet Armenia.—News release.

Military Strength

A NATO headquarters report estimates that the Soviet Union and her satellites have 4,500,000 men in their ground forces, 1,000,000 in the air forces, and 500,000 in their navies. A SHAPE report credits the Soviets with 175 divisions in the ground forces, and indicates that they have no direct evidence of any reduction in men

under arms. The report further states that the USSR has over 450 submarines in service, of which about half are large or medium oceangoing types. The Soviet naval construction program continues to lay emphasis on the production of large oceangoing submarines.—News release.

CANADA

Mid-Canada Radar System

The 170 million-dollar mid-Canada radar warning system is expected to be put into service by 1 January 1957. It has been previously announced that the Distant Early Warning Line (Dew Line) (MILITARY REVIEW, Jul 1956, p 69) would be brought into operation at the same time as the mid-Canada Line. The mid-Canada and the Dew Lines are two of the three chief components of the North American radar network. The Pine Tree Chain, which roughly follows the 49th parallel, has been in operation for the past 2 years.—News release.

ITALY

Superhighway

A planned 458-mile *autostrada* (superhighway) will link Milan on the north with Naples. A total of 6 miles of tunnels and 2,315 bridges will be constructed for the new highway. It is expected that the project will take 6 years to complete and will cost slightly less than 300 million dollars.—News release.

SOUTHERN RHODESIA

Hydroelectric Project

A 400-foot high dam in the Kariba Gorge of the Zambezi River is planned as part of a giant South African hydroelectric development. A group of six construction companies have combined in the 70 million-dollar project. When completed, the dam will contain the largest manmade lake in the world, more than 150 miles long. First electric power is expected from the project by 1960.—News release.

GREAT BRITAIN

Escape Method

A much faster method of escape for sailors trapped in a sunken submarine involves the use of a canvas trunk just within the escape hatches. Under the old system, men could escape at the rate of one every 5 minutes, but with the new system only 3 to 5 seconds are required between each escape. In an emergency the men don buoyant immersion suits as protection against the cold water. The compartment beneath the hatch is flooded and the men crawl through the canvas trunk and open hatch to float to safety. This eliminates the requirement for the operation of a conventional air lock. The development of a faster escape system was prompted by the loss of the submarines *Truculent* in 1950 (65 dead) and *Affray* in 1951 (75 dead).—News release.

Lightweight Fighter

The *Folland Gnat*, Britain's lightest and smallest jet fighter, has successfully completed its first test flight. Powered by a *Bristol Orpheus* turbojet engine, the *Gnat* is capable of high-subsonic speeds and has a reported ceiling in excess of 50,000 feet. It is claimed that this plane, which is ap-



Folland Gnat jet fighter.

proximately one-third the weight, half the size, and commands half the thrust of a standard jet fighter, will cost only one-third as much to build.—News release.

Experimental Helicopter

Great Britain's *P-74* helicopter is now undergoing preliminary tethered test runs. The *P-74* has a pressure jet-driven rotor



Helicopter has pressure jet-driven rotor. ('The Aeroplane' Copyright Photograph.)

which is powered by two *Oxyr* gas generators (MILITARY REVIEW, Sep 1955, p 67). It is an experimental aircraft designed primarily to develop this form of rotor power system.—News release.

Latest Comet

The *Comet 4*, latest in the *D.H. 104 Comet* line, made its first flight in 1955 and is being ordered by many customers, to include a 53 million-dollar purchase by United States airlines. The *Comet 4*, a development of the *Comet 2* military transport (MILITARY REVIEW, Aug 1956, p 71) and the *Comet 3* prototype, is powered by *R.A. 29* turbojet engines and has a cruising speed of 545 miles an hour. The 14 *Comet 4* airliners now on order for United States service are expected to be in use on American domestic routes by early 1959.—News release.

PHILIPPINES

United States Naval Airbase

The United States largest overseas naval air station has been commissioned at Cubi Point, 50 miles northwest of Manila on Bataan peninsula. The air station, established under SEATO agreements,

took 5 years to construct and cost about 47 million dollars. Approximately 80 million more will be spent before it is completed in 1962. Facilities of the station include an 8,000-foot concrete runway, a 400-foot aircraft carrier wharf, and 40,000 square feet of storage for high explosives.—News release.

Treaty Ratified

The Philippine senate has ratified the 1951 peace treaty with Japan, ending the 11-year technical state of war between the two nations. The Philippines had signed the treaty along with the United States and 47 other non-Communist nations in San Francisco in 1951, but heretofore has refused to ratify it pending the completion of negotiations concerning reparations for war damage.—News release.

Military Aid

It is planned that the Philippines will receive 30 *F-86 Sabre Jets*, 4 *SA-16* amphibian planes for air rescue operations, and several *T-33* trainers next year under the United States military aid program.—News release.

JAPAN

Experimental Rocket

The Japanese Defense Board has announced that an experimental rocket, the first in a planned series of nine, was fired recently. The test vehicle, 4 feet long and weighing 352 pounds, split apart at about 12,000 feet and instruments which the rocket had carried aloft were parachuted to earth. The rocket was fired from a rail type launcher.—News release.

Maiden Cruise

The *Ikazuchi*, the first destroyer built in Japan since the end of World War II, has completed its maiden cruise. During the test run, the destroyer attained a top speed of 25 knots. Four other destroyers of the Japanese Fleet, leased to Japan by

the United States Navy, can do 35 knots.—News release.

ROMANIA

Arms Cut

The Romanian Army, which was reported to have been cut by 40,000 men in 1955 (MILITARY REVIEW, Sep 1956, p 72), has announced that a further reduction of 20,000 men will be made by 15 September 1956. No other details were disclosed.—News release.

TURKEY

Plant Completed

The Seyhan River hydroelectric plant, construction of which was started 3 years ago (MILITARY REVIEW, Feb 1954, p 68) is now in operation on a trial basis. The plant will furnish 284 million kilowatts of power to textile factories and other industrial enterprises.—News release.

EAST GERMANY

Uranium Deposit

A large uranium deposit, possibly the largest in Europe, is claimed to have been discovered in the Thuringia area of Communist East Germany about 140 miles southwest of Berlin. The find is said to be so large that a town of 11,000 inhabitants will have to be evacuated to facilitate mining operations. The huge deposit is expected to last 15 to 20 years.—News release.

PAKISTAN

Trade Pact With USSR

Pakistan and the Soviet Union have completed a trade pact in which Pakistan will sell the Soviets jute, cotton, wool, hides, and tea. In return she will receive industrial and farm equipment, chemical products, metals, oil, and timber. The total amount of trade anticipated was not announced; however, it is known that all payments will be made in Pakistani rupees.—News release.

FOREIGN MILITARY DIGESTS

In Search of a More Suitable Organization

Extracted, translated, and digested by the **MILITARY REVIEW** from an article by Major General E. Wanty in "L'Armée-La Nation" (Belgium) January and February 1956.

THE various recent proposals for reorganization for atomic war all seem to display disregard for what already exists—to start from zero and build up a new organization. This appears to indicate a desire to choose the easier alternative and a lack of realism for during the course of history, organizational evolution has nearly always occurred as a gradual modification of one form into the other, without abrupt change or interruption. When reorganization is made there will usually ensue a period of crisis and imbalance due, in part, to the inherent inertia of the military machine. It would mean increasing risks to wipe the slate clean before beginning.

To be sure, it is probable that a new formula will constitute only a transitional stage while awaiting disarmament or a totally new concept of war resulting in revolutionary reforms. We have not yet reached this stage. What we need, at the present time, are units that are more flexible, lighter, better suited for maneuver, and endowed with at least the same firepower as in their present heavy form.

It should be possible to achieve this from the present organization without a break of continuity.

Is it not, also, an error to attempt a radically new organization but at the same time retain the present armament? One of the characteristics of the moment is the vast differential between the factors of numerical strength and firepower. Firepower, with the advent of tactical atomic weapons, has become independent of the number of troops placed in the line. This evolution cannot but continue. We will do well to ask ourselves whether we have not passed the era of automatic, flat-trajectory, crew-served weapons. We still find proponents of the stability afforded by the cannon in the form of the dense, carefully prepared, systematic barrages in accordance with the formula of the era prior to 1940. But is the fact sufficiently considered that these tactics, which came out of the war of 1914-18, were able to destroy, let us say, 10 percent of the forward positioned infantry support weapons? With the atom bomb we could be in danger of having 50 to 60 percent of these

weapons in position destroyed at a single blow. What would happen, in this case, to the carefully prepared barrages and the final protective fires? The weapons that remain after the atomic assault will have to fire at targets of opportunity—directly at the enemy wherever he appears—hence must be capable of active, flexible, and dynamic fire.

In a search for an organization better suited for these needs, the most prudent and most realistic method is to proceed from the known to the unknown, from the simple to the complex, from the base to the summit.

Let us begin, therefore, at the bottom, with the elementary, organizational cells, seeking to arrive step by step at the modifications which appear desirable and possible. It is not necessary to develop an organization for an entire army. Satisfactory results will be achieved by establishing for the large operational unit (the division), a suitable organization—providing the modifications are justified by arguments and not imposed by simple affirmations.

The Infantryman

No organization will be suitable unless there is an increase in the proportion of riflemen; that is, actual infantrymen capable of group maneuver but at the same time capable of retaining a certain degree of firepower while dispersed. A basic organization centered around *one* automatic weapon cannot give us the proper solution, since the whole crew would have to gravitate around the weapon it serves. Why not consider the solution adopted by the Belgians—the individual automatic rifleman? This, it seems, is the evolutionary step necessitated at this level by technical development.

Why not, for the purpose of logistical simplification, attempt the unification of armament: technique now renders this possible.

Finally, another very real aspect of to-

day's and tomorrow's army must be respected: the practical limits of the exercise of command, both from the psychological point of view and that of matériel. Also the far greater majority of the basic cadres, officer and noncommissioned, are furnished by the reserve. This must be considered in the organization.

The Squad

Greater firepower, greater flexibility in maneuver, a greater proportion of riflemen, and easier command. How can we associate these four conditions in a single formula? We recommend 6 enlisted men and a noncommissioned officer. This is a reduction of 2 men as compared with the present organization, all armed with automatic rifles and 1 with a rifle anti-tank grenade launcher. Why 6, and not 5 as has been proposed? For this reason: With 6 we have a ternary organization (3 times 2) which ensures relief, continuity, and rest. It is adapted to two missions which nothing permits us to suppose are abolished: sentry and patrol duty. It lends itself to many formations; its command is relatively simple, thanks to a unification of armament and unity of mission. It is a team, and must have the spirit of a team.

The Platoon

A ternary organization at this echelon seems most desirable because the platoon will never be intentionally isolated in a center of resistance and obliged to conduct an all-around defense, *particularly* since it will be commanded by a reserve second lieutenant and because everything must be simplified for the purpose of relatively easy and effective action. It must include a strong antitank defense. The formula could be: 1 officer, 1 assistant noncommissioned officer, 2 men with antitank weapons, 3 squads of 7 men each, making a total of 25.

Let us compare the firepower of the platoon of 1955 (41 men) and the proposed platoon:

	1955	Proposed		
Submachineguns	13	15 (1 officer and 4 NCO's)	4 rifle companies	576
30-caliber light machineguns	4	----	1 heavy weapons company	114
Rifles	19	----	Headquarters	109
Rifles with telescope sights	3	----		
Automatic rifles	----	18		
Antitank grenade launchers	3	3		
Antitank weapon	1	1		
Pistols	4	----		
Mortars (2-inch)	4	----		

The lightened platoon is more suitable for maneuver and at the same time places in the line 23 portable automatic weapons. It must be admitted that the rifle and the pistol are largely outmoded.

The Company

To facilitate dispersion in the interior of the defense position it would be necessary to consider the company in an autonomous center of resistance. It will have to occupy terrain faced in all directions and have reserves of its own. Moreover, the exercise of command over it will be facilitated to a certain extent: There generally will be a captain in command, with radio contact between company and platoon headquarters. Therefore, a quaternary organization as follows is most favorably considered:

4 platoons of 25 men	100
Staff and services	20
1 weapons platoon (mortars, antitank guns)	24

A total of 6 officers and 138 noncommissioned officers and enlisted men.

The Battalion

Here again, and for the same reasons, the quaternary organization of infantry companies seems preferable, particularly since this permits an increase in the proportion of riflemen. This facilitates the maneuver of the reserves and increases flexibility of formation. Thus we have:

This gives us 799 men for a battalion of 5 companies, as compared with 882 for the present battalion.

The machinegun platoon is no longer included in the heavy weapons company; however, practical experience may demonstrate a continuing requirement for this heavy and cumbersome armament. If its elimination is proved premature, the strength of the unit must be increased by about 40 men in restoring the machinegun platoon to the battalion.

The battalion is the point of the fighting. It is accepted as the basic unit for the center of resistance. In time of peace it takes the place of the former regiment with its flag, its name, and its corps spirit. Is it desirable to go backwards in organizational development—to reduce it to a groupment of riflemen? As such, it could never be called on to engage in any mission with its organic means only. All mission type orders require attachments and imply lost time.

To be sure, only 50 percent of our battalion of some 800 men are actually riflemen, the remainder consisting of the supporting weapons, headquarters, and services. But the present battalion has only about 28 percent riflemen. The suggested organization is thus in the neighborhood of an acceptable balance between fire and maneuver.

Let us look a bit more closely at the problem of the supporting weapons: 40 men for eight 30-caliber machineguns (inclusive of 16 ammunition carriers), 40 for 4 antitank cannon (inclusive of 8 ammunition carriers), and 50 for four 3-inch mortars (with 20 carriers). This is what is required at the present time in the matter of personnel.

We may look forward to a new technical development which will modify and lighten these weapons in the sense of weight, and

permit a reduction of personnel while at the same time increase their efficiency. This efficiency may be expressed by the relationship between unit weapon and the number of men required to serve it. It will attain its highest value under the new conditions, with rocket weapons and light atomic weapons whose enormous efficiency will be out of all proportion to the small number of individuals serving them.

To a more modest degree, a revision of their vehicular endowment would permit solving at less cost (at least in men) the problem of the mobility of these units and their supply on the field of battle.

The problem exists, not only for the supporting weapons but also for the infantry which must be more mobile, more fluid, and suited for maneuver off the roads, even in terrain that has been subjected to atomic bombardment. In the final analysis these needs can be met in a single fashion only—by the employment of specially devised cross-country vehicles either without armor or only lightly armored, low in profile, and with floors that shield against radiation. Each must be capable of transporting a squad and its ammunition and food for 2 or 3 days, thus assuring its autonomy.

A certain objection is that this will result in a mass of vehicles on the front—15 or 16 vehicles of this type instead of the few jeeps and 4.5-ton trucks allotted to the present company. Consideration must be given to the economy in vehicles thus realized in the logistic chain, due to these all-purpose, very maneuverable vehicles of but slight vulnerability.

Up to this point, far from modifying organizations in a fundamental manner, we have proceeded by simple retouchings of them. But here the perplexity increases. If we adhere to the definition of defensive combat, until recent times the brigade (generally equivalent to the United States regiment) had a precise role—for instance, the command of the first 2 echelons over

half of the divisional front in the classical 2 up and 1 back disposition.

Under the atomic threat depths increase. Two successive echelons cease to constitute a single system, since the battle will be waged in each of them successively or simultaneously. The brigade, therefore, is no longer a regiment in the sense of moral cohesion; neither is it an organic combat team. It is, in fact, quite hybrid in its nature.

It finds itself astride between two possible solutions, but in its present form it constitutes a unit between the battalions, which are the tactical pawns, and the division, the smallest combined arms unit. Its permanence, as such, does not seem necessary.

If we retain 3 brigades (with their large headquarters) of 3 battalions each, we reach and exceed the figure of 9,000 men for the infantry alone and again have a division of the heavy type. A supplementary link cannot but slow down the transmission of orders. Each one must take the time to read them, to adapt them to his own echelon, to complement them from the logistic point of view, and to reproduce them in their new form. This is loss of time while every other action contributes to the reduction of dead time.

The division, in planning its defense disposition, must determine the location of its battalions. It will establish their exact location, for maneuvers of fire and the movements of its reserves will largely depend on the "empty" spaces left. Here, decentralization of command is not possible.

On the other hand, the ever-present requirement for coordination and command in combat will still necessitate the presence of fairly large headquarters, and we thus come to a complete separation of the infantry battalions from the brigade headquarters. The battalion will receive its orders directly from the commander of the division; the brigade will be charged, in this framework, with a very definite

mission—the command of an echelon, for example, or of a group of battalions.

In time of peace the brigade headquarters can, without any resulting difficulties, retain its present tasks of administrative coordination; in time of war it would constitute an exclusively operational headquarters.

How many battalions in the division? In order that the division may remain relatively light there should not be more than 7, and 6 appears to be even more desirable for an even number facilitates tactical combinations. Six battalions could constitute, in time of peace, 3 brigades of 2 battalions or 2 brigades of 3 battalions. How many brigade headquarters would be necessary in operations?

Let us consider the tactical disposition. Two commanders share the first echelon; another assumes the command of the second echelon; and another of the reserves.

It requires, therefore, at least three tactical infantry commanders at the brigade level. In time of peace one of the headquarters could be a reserve brigade.

One advantage of this organization as considered under the threat of the atom bomb resides in the possibility of possessing at some point in the dispersed position one intact headquarters if others have been liquidated. Interchangeability of headquarters must be considered in any contemplated order, thus increasing the importance of the intermediary echelon.

The Reserves

Thus far only the static factor of the defense has been mentioned. However, it is certain that maneuver will play an important role in the conduct of the battle.

Maneuver is the reconnoitering which occurs in the search for information; delaying maneuver on the forward outpost line; maneuver in the interior of the security zone; maneuver during the course of the defensive battle; and maneuver in retreat. We are concerned here with a varied employment of available means in

greatly differing situations, yet with common requirements: mobile, flexible, and powerful troops in minimum numbers to accomplish their task. We shall call them *reserves* because their most normal form of intervention in the course of the defense will be that of crushingly decisive attacks followed by an early return to the disposal of the command.

Having reduced the number of the infantry battalions from 9 to 6, there is a temptation to increase the proportion of tanks in the division, for the role of maneuver seems to be preponderant. Therefore, let us propose a formula in which the reserve would have its own command (of the brigade type) and would comprise: 1 reconnaissance battalion, a combination of light tanks, motorized infantry, and engineers; and 2 battalions of medium tanks of 2 tactical and 1 service company each.

The entire reserve should comprise a maximum of 600 to 700 men with around 10 light tanks and about 60 medium tanks.

Artillery

This arm cannot be reduced in the framework of the division. The Soviets continue to accord it much attention, and the great number of their divisions without any doubt confers on them superiority in this domain as well as in others, without even counting their general artillery reserves.

It is an established fact that the effectiveness of the classical weapon pales in the face of the weapons of collective destruction; that on the battlefield its formations are cumbersome and well-calculated to serve as atomic targets; and that their ammunition supply requirements overload the convoys and create a permanent threat to communication lines.

But other considerations prevent drawing any conclusion of a radical nature. First, there is the uncertainty which exists, and which will continue to exist until the opening of hostilities, relative to

the employment of the atomic weapon. Next, if the atomic weapon is tactically employed, there is the infeasibility of employing it under divisional control. Finally, there is the necessity of having at one's disposal a weapon answering the requirements of particular local combat situations.

Artillery pieces are already obsolete in their present forms. We shall continue to use existing pieces until they are worn out or definitely outmoded, but the future belongs to lighter, less cumbersome, more rapid, less costly, and probably equally effective matériel: mortars and, particularly, rocket launchers (whose excessive dispersion is a technical disadvantage at the present moment). But we cannot, with a stroke of the pen, modify what already exists. The evolution will be accomplished by successive adaptations.

In view of these factors a brigade of divisional artillery is proposed—a headquarters, 3 battalions of light self-propelled field artillery of 3 batteries each; a battalion of 3 batteries of medium artillery, and a light self-propelled antiaircraft battalion of 5 batteries. Finally, an antitank battalion would give a total of 1,800 to 1,900 men.

There exist other, more ambitious solutions. In one of them there is attached to the tactical groupment centered in the infantry battalion a self-propelled battery of 8 pieces, in addition to 81-mm and 120-mm mortars, and 105-mm recoilless guns. In addition to these 5 to 7 batteries, the divisional artillery would comprise 2 or 3 battalions of 155-mm guns of 18 weapons each, and 1 battalion of heavy artillery of 2 to 3 batteries of 16 pieces. This immediately increases the strength of the artillery to the detriment of the vulnerability and mobility of the division.

Engineers

The role of the engineers will be increased in the new type of war. The ampli-

tude of the ravages attributable to atomic weapons will demand an enormous amount of cleanup work with mechanical equipment, and rapid reestablishment of means of communication. In the divisional echelon it seems possible to leave this to a battalion of three companies provided with adequate matériel. However, it seems necessary to add to it a new unit with a special mission. The engineers have always been a frontline combat unit although designated as more technical than tactical. These two aspects should be joined. The effectiveness of the mobile maneuver in the advanced covering and delaying zone would be greatly increased if assigned a battalion of engineers whose training had been technical (specially trained in work on obstacles and rapid demolitions) and tactical in the sense of the commando. These engineers could be organized like the basic units of the infantry with small cellular units transported in cross-country vehicles of their own. In addition to their tactical employment (harassment, delaying action, rear-guard action) this light, 3-company battalion would reinforce the divisional engineers. The two engineer battalions would be under a single command.

The engineers needed in the rear areas will be numerous, well-organized battalions dispersed over the terrain, capable of concentrating in accordance with established plans, and of conducting their technical work while at the same time capable of ensuring their own security and defense.

Calculations

With the signal-communication battalion, whose importance is obvious, the list of the tactical units of the infantry division is complete. The following is an approximate numerical summary (according to order of magnitude), adopting for the headquarters figures which appear to us as maxima:

Headquarters, infantry division: 200;

3 brigade headquarters: 300; 6 battalions of 840 men (including machinegun platoons): 5,040; armored reserves: 710; artillery: 1,800; engineers: 700; troop transport: 500.

This gives a total of 9,250 men in the tactical units.

If, some day, the autonomy of the elementary cellular unit on its own vehicle is accepted, it will be necessary to increase each squad by a driver-soldier, or 48 for the battalion. The transportation vehicles for personnel and material brought forward in this way and distributed in the vicinity of the front will effect a reduction in the vehicles otherwise required in the rear, as well as in the logistical tail of the division.

There must be repair and maintenance services at the disposal of the division: "pools" of medium trucks for rear area operations; medical and laundry service; and depots of matériel (supply points) for the engineers and signal service. It seems possible, by a revision of basic needs and echelonment in depth, to both satisfy these requirements and effect a large economy of personnel and vehicles while at the same time ensuring greater flexibility of operation.

The Armored Division

In an atomic situation, in defensive or offensive action, the armored division's characteristics of power, flexibility, and mobility will not be changed. But an attempt must be made to bring to an end the radical distinction existing between the infantry division and the armored division—not so much from the point of view of their respective missions, where the differences continue to be profound, but from that of the means to accomplish these missions. The large units of the two classical types, to which in the major powers is added a third—the mobile mechanized division—will be composites of the same ingredients but in different proportions. They will now constitute combined-arms group-

ments as contrasted with the former homogeneity with its exclusiveness of armament. We have here not only a technical, but also a moral revolution.

The infantry division, to give it a name which it hardly merits any longer, is the "buckler" (shield) and is devoted to static defense. The armored division is the "spearhead." The first evokes the idea of the ancient "square," the present "all-around defense," and the second reminds us of the triangle, a ternary organization with its point directed toward the enemy.

Like the infantry division, but in different proportions, the armored division must have its rapid, mobile, highly maneuverable reconnaissance element; its shock element; its support element; and its infantry, artillery, and engineers. It amounts, basically, to permutations of the factors: *armor* and *infantry*, but, as in a chemical compound, this suffices for thoroughly modifying the resultant compound.

Even more than the infantry division under the atomic threat, whether in defensive or offensive operations or in the general reserve, the armored division must disperse widely in the terrain in subgroups capable of concentrating rapidly on a required objective. In view of the requirement for dispersal, each of these subgroups should be capable of operating in an independent manner. Essentially, the infantry battalion fulfills this condition—an isolated tank unit does not. Tank, artillery, and infantry cooperation is indispensable at all times.

If this conclusion is accurate, wholly or in part (and we repeat: one advances but gropingly in a matter involving so many unknowns), we should be forced to deduce that the structure of the armored division should consist, not in a juxtaposition of homogeneous units (for example, a tank regiment, an infantry regiment, an artillery regiment, and an engineer unit), but of a combination of combined-arms groupments where these different elements

will be associated under the orders of commanders trained in their coordinated employment.

This conclusion should not be applied to the reconnaissance unit. The greater the extent to which it covers the entire front of the large unit, the more effectively accomplished the mission of this unit will be. Its breakdown into several forces under several commanders would give rise to the risk of leaving gaps in the rapid search for, and exploitation of, information. Moreover, it is an organization which belongs to the command of the armored division and may become a reserve for other useful employment.

Generally speaking, then, if we retain the large armored unit in the divisional echelon, it would appear in the form headquarters-reconnaissance regiment; three combined-arms groupments; and a logistical groupment.

The reconnaissance regiment must have charge of all missions in which maneuver and mobility dominate: that is, the offensive and the mobile defense. It would be composed, for example, of three identical squadrons of light armored reconnaissance vehicles.

Each of the combined-arms groups should have its own reconnaissance unit—each should have more powerful shock power, for example, a mixed armored battalion of 2 companies of medium and 1 company of heavy tanks with each company having 17 tanks. This solution, while more difficult perhaps from the point of view of command, lends itself better to dispersion and to the autonomous action of the groupment.

The infantry element could consist of a light battalion. The cellular unit (the

squad) should be transported in a cross-country vehicle. This solution would also satisfy the requirement for the rapid support of the tanks, an essential condition of the infantry-tank union. The lightened battalion could comprise 3 companies of light infantry, with numerous antitank weapons, and 1 company of heavy mortars or a company of light tanks.

In the combined-arms regiment there would be a self-propelled battalion of light field artillery of 3 batteries. In the divisional echelon there would be, in addition, a battalion of medium field artillery and a battalion of antiaircraft artillery of 4 or 5 batteries—all this matériel self-propelled. All this artillery must be capable of massing fires under the divisional artillery.

The engineers and the signal communication troops would likewise be divided between the combined-arms regiments, with a nucleus remaining at the divisional level. Here again, it seems that the strength of the engineer forces should be increased.

Conclusions

Out of the studies and experiments that are being conducted, several conclusions have appeared:

A very real necessity exists for lightening the large armored unit and of adapting it to the new conditions of war.

The possibility of doing this by stages: to begin with, in the framework of the existing matériel (tanks, cross-country vehicles, artillery); afterward by the technical evolution of this matériel.

The intrinsic importance of the combined-arms groupment or regiment or, again, "combat team."

The increased difficulty of commanding such units.

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The Army Great Britain Needs

Extracted and digested by the MILITARY REVIEW from Report of the British Army League Sub-Committee 1955 entitled "The Army in the Nuclear Age."

The British Army League is a group of eminent private citizens with political, military, and business experience. Its membership includes members of Parliament, officers of the armed services, and business executives. The report from which this article was extracted concerns itself with the changes in structure and organization of the British Army necessitated by the advent of nuclear and thermonuclear weapons into military consideration.

THE kind of army Great Britain needs depends on the kind of war that army is intended to fight. Throughout history, the major problem confronting military planners has been to decide what the next war would be like and to prepare for it in time. This problem of preparation has been complicated in the present period by the fact that our army has to discharge four major functions at the same time:

1. *The conduct of cold war, involving operations against terrorism, sabotage, and riots such as we have experienced in Kenya, Malaya, and, last year in the Suez Canal Zone.*
2. *The waging of regular but localized military operations such as the conflict in Korea.*
3. *The maintenance of preparations against the continuing danger of an immediate and general war.*
4. *The adaptation of our forces to the new industrial revolution which is transforming contemporary strategic and tactical conceptions, and already confronts the military planners with an entirely new situation.*

These four aspects of our military effort are, inevitably, to some extent in conflict with another.

Localized campaigns, such as the recent Korean and Indochinese conflicts, have followed, more or less, the pattern of operations in the last war. Much the same weapons have been used; and many of the assumptions of 1944 have tended to persist thanks to the fact that, in both campaigns, the Western forces have enjoyed almost complete air superiority.

If a major war were to break out in the immediate future, operations would be altogether different from those of 1944-45. For one thing we should almost certainly be on the defensive, not the offensive, on the ground at any rate, in Europe. For another we might not even enjoy air parity, let alone air superiority. Beyond these there is now the probability of the strategic bombing of ports, bases, and industrial centers with atom and hydrogen bombs. "Tactical" atomic weapons, and guided missiles, moreover, are likely to be in general production well before the end of the present decade.

Let us consider what the effect of these new weapons is likely to be on the organization and handling of the army. It is, of course, possible that the hydrogen or atom bombs may never be used. The arguments for and against the use of these potentially decisive weapons go beyond the scope of this discussion. Many of them, indeed, are predicated upon very wide political and psychological assumptions. It must, however, be said that there is at any rate a probability that they will be used and that such a probability would become a certainty if one of the two contending groups of powers failed to adapt its defense planning to the new weapons.

The radius of destruction of the atom bomb is from 3 to 10 miles; that of the hydrogen bomb may exceed 50 miles. Both, moreover, have radioactive properties which give them a continuing destructive value for days or weeks after their immediate explosive power has been spent. The radius of action of nuclear weapons means that they need to be delivered much less accurately than high-explosive bombs. They are, therefore, better suited to being dropped from a great height or to being delivered by a guided missile.

It is arguable that the best defense against these weapons will ultimately lie in building so strong a system of radar, fighter aircraft, and guided missile defense that the losses the attacker would have to sustain in the process of "getting through" to the target would outweigh the advantages of an eventual direct hit. Deep shelters for troops, essential industries, aircraft and other key installations may also provide effective protection outside the area of the direct hit. The development of the bomber and guided missile, however, suggests that, at the present time, the advantage is so much in the attacker's favor that dispersal offers the only hope of defense. Even so the term "defense" can only be used in a very relative sense.

Strategic nuclear and thermonuclear bombing is likely to interfere first of all with communications. Harbors, airfields, railway junctions, and roads may be put out of action altogether. It will be essential to disperse the means of transport as much as possible. Ships must embark troops or supplies from barges. Aircraft must fly from a widespread network of airstrips rather than from major airfields. Such attempts at dispersion must greatly increase problems of supply for the armed forces as well as for industry and the consumer.

It will, therefore, scarcely be possible to nourish large armies such as were sup-

plied in the last war through main harbors and by long railway lines. On the contrary, the premium will now be on the force which is as fully self-supporting as possible; in which every man is a skilled mechanic capable of repairing as well as using his vehicle or weapon; in which there are no superfluous mouths to feed; and which will use its ammunition as sparingly as possible.

The trend to dispersal and smaller, more self-supporting armies will be intensified by the "tactical" use of atomic power. Atomic shells and other tactical atomic weapons will lead to still greater dispersal on the field of battle. Troop concentrations will be more vulnerable than ever. Movements will have to be undertaken across country rather than along roads. The swift moving wheeled convoy will have to give way, at least in the frontline, to the tracked troop carrier. Supply will have to be undertaken as much as possible by air, and more particularly by helicopter and other aircraft equipped with vertical lift and landing mechanism.

How will the development of tactical atomic weapons as well as of the bazooka affect the use of armor? (Will it spell the end of the heavy tank, just as gunpowder spelled the end of the knight in armor?) This is by no means certain. The tank is a device to enable direct accurate fire to be delivered in the most effective way—that is, in the midst of the enemy or from his rear or flanks. In addition, modern improvements have given it speed and endurance, and with these the possibility of surprise. There is much to be said in favor of fleets of small swift tanks, each with a crew of 2 or 3—packs of destroyers in fact rather than capital ships. On the other hand, attempts to reduce size must be limited by considerations of speed, endurance, cross-country performance, and the power of the weapons mounted, all of which are in favor of the large tank. Only a large tank, for in-

stance, could mount atomic cannon.

Whatever the fate of the tank, the advent of tactical atomic weapons and the increasing tendency to dispersal should mark the end of high-explosive rifled barrel artillery just as the guided missile has already made the antiaircraft gun virtually obsolete. Atomic cannon against major targets, and bazookas and mortars against vehicles and troops should largely take its place. This may effect some compensating economies in the cost of equipment and make possible some reduction of supply lines.

The loosening of the front, the dispersal of industry, civilian population, and communication centers, and the formation of temporarily radioactive or infectious zones will tend to encourage deep raids into enemy territory against industrial and political as well as against purely military targets. These will be undertaken either across country by armored units or by airborne formations. Such raiding forces would have to live off the country with the addition of some air supply. They would probably be kept small because of supply difficulties. Defense against them might consist of static troops guarding vital installations and supported by strategic reserves designed for the counterattack.

The conception of war which emerges is one of widespread dispersal of economic life behind the front; of a very loosely manned front; of cross-country or airborne raids by both sides deep into each other's territory countered by static, local defense forces based on deep shelters for troops and factories and backed by mobile strategic reserves.

It is, at the least, questionable how far the present structure of corps, divisions, and regiments would be suited to such operations. It seems possible that the conception of the task force, built with the battalion as the basic unit, may come to predominate. In any case, there would seem to arise a very clear distinction be-

tween the highly equipped, highly trained, and highly mobile elite troops, used in the attack or as strategic reserves for the counterattack, and the general defense in depth which must be relatively static. The battle would be between task forces of a commando type against a background of strong points guarded by second-line troops and a home guard.

The tactical considerations enhancing the value of the individual fighting man will be still further underlined by the development of air transport. If you are going to fly troops across the world or from one part of the battlefield to another, each man must be worth the trouble and expense involved. Large masses of men, indeed, will still be required for the defense of vital areas behind the lines. This will be the main task of the territorial army. The troops, however, which are to be "dropped" into the attack or which are to be flown out to defend the Middle East or Southeast Asia will need to be intensively trained elite formations.

If the above view of the likely evolution of modern war is correct, the army will have three main functions to fulfill.

First it must supply the elite fighting troops. These will be relatively few in number, highly trained, and young. They will form the armored units, paratroops, commandos, and jungle or mountain task forces.

The second task of the army will be to provide troops organized for static defense in depth, for mopping up operations, and for the occupation of conquered ground behind the front. This second-line army would also be responsible for garrison duties in the different bases and fortresses overseas. Its main cadre would be provided by those officers and noncommissioned officers of the elite army who were no longer young enough or fit enough for commando type exertions or who could expect no further promotion in the elite army.

The army's third task would be the organization of factory, town, and communication defenses against deep penetration or airborne raids by the enemy. This would call for a home guard, which would be a compulsory service in time of war. Here again the cadre would be mainly drawn from those officers and NCO's of the first- or second-line army who had reached the retiring age for their rank. Another aspect of the home guard's duties would be civil defense. Under the conditions of atomic and hydrogen bombing, this will assume a far greater importance than in any previous war. The ability of a nation to continue fighting under atomic and hydrogen bombing will depend as much as anything on the successful organization of civil defense.

There would thus emerge a pattern of three distinct services within the army—an elite mobile army, a territorial army for static defense, and a home guard. The link binding the three together would be the regular officers, NCO's, and enlisted men who would automatically pass into the territorial or home guard army as they passed certain age limits for their rank. Anyone joining the regular army could thus look forward to a life career from the age of 18 to 55 or 60.

In theory it would probably be best if the elite army were composed entirely of regulars. Selective service would then be designed solely to train civilians for static defense and might be shortened accordingly. In practice, however, it is very unlikely for some time to come that the army could recruit enough regulars to meet all our different commitments. It might be possible with the help of colonial or other auxiliaries to make the Southeast Asian and Middle Eastern strategic reserves largely a regular commitment; but the maintenance of four divisions on the continent of Europe and the manning of our different overseas garrisons is likely to remain a Selective service commitment as

far ahead as can be foreseen. Even to make the Middle Eastern and Southeast Asian strategic reserves entirely a regular commitment would only be possible if recruitment for the regular army could be very substantially increased.

Our group is of the opinion that three major considerations have to be borne in mind in considering how to increase the regular element in the army:

1. *Pay and living conditions.*—Higher pay, better food, and improved accommodation particularly for married personnel can play an important part.

2. *Prospects.*—We have laid stress on the conception of a 3-tiered army—active elite, static garrison, and home guard—whose cadre would be supplied at each stage by regular officers, NCO's, and other ranks as they passed certain age limits. Thus a young man joining the regular army at 19 might look forward to 15 years with the active army, 10 years of static defense and garrison service, and a further 10 years in the home guard or administrative departments. The army would thus be his entire life and, on this basis, could provide him with an adequate pension on retirement.

3. *Modern war demands elite formations.*—Such units as airborne and armored units, and commandos have a glamour of their own which will draw recruits; hence the need to emphasize the distinction between the active army and the static and garrison formations.

The conditions of hydrogen war would make it virtually impossible to carry out the mobilization of the territorial reserve as at present conceived. Plans should be made so that on the outbreak of war reservists would make their way automatically to assembly areas where they might be flown to safe areas overseas. They would then be available to carry on the struggle and defend the national interest should the British Isles themselves be temporarily put out of action.

The Soldier and the Map

Translated and digested by the MILITARY REVIEW from an article by former Colonel Konrad Röhr in "Wehrwissenschaftliche Rundschau" (Germany) June 1955.

THE development of cartography has always been influenced by military considerations. The soldier, tied to the terrain by his profession, must be able to orient himself and know his operational area if he wishes to commit troops and weapons effectively. He is enabled to do this by means of maps. Certainly the more understandingly and easily a commander can read maps which show the military practicability of the terrain, the more effective his decisions and orders will be.

In the planning of operations, calculations relative to "time and space" force a commander to take account of the increased speed of mobile means and to determine accurately the time elements involved—for this the map is an indispensable prerequisite. In this age of technique and artillery development, dependence on trigonometric bases has been added to our dependence on the map itself.

Topographic surveys formerly were almost exclusively of military organizations. The maps made were principally "military maps" needed for definite campaigns. The areas represented were relatively restricted. Under Frederick the Great military topography experienced an extraordinary upswing. He had the map and plans room in his castle in Potsdam and permitted no reproductions in order to prevent neighboring countries from having map material available in case of war. Only the Academy of Science could have engraved copies.

The military maps of Frederick the Great also were destined to serve as "firing maps" indicating elevated points of the terrain for the benefit of the artillery which in those days was in the habit of going into position at such points. These maps, therefore, made use for the first time—in a general although as yet un-

systematic manner—of hachures to represent elevations.

General Staff Training

After topographical surveying was placed in the hands of the Prussian General Staff in 1816, Field Marshal Baron von Muffling issued the order that every general staff officer would spend a portion of his time on topographic activity. This order was observed until 1914. Von Muffling set the standard in topographic activity by alternating between command and survey posts. His successor, Field Marshal Count von Moltke, Chief of the General Staff from 1850 to 1890, produced seven ordnance survey maps, mapped both sides of the Bosphorous and Dardanelles, and within 6 months' time completed a map of Rome and its environs. Also, the map of Asia Minor assumed form under his direction.

Moltke introduced the study branch of "Military Geography" in the *Kriegsakademie* (German General Staff College) with the intent that the map should be well-known to the future general staff officer not only as a means of orientation, but as a source of geographic data. He, himself, had been helped in all his decisions by a thorough study of the map with its military implications. He meant to make the map a valuable military aid to the general staff officer. However, World War I and the Versailles Treaty put an end to the topographic training of the young German staff officers.

French Mapping

Comparatively, the area in which Napoleon waged his wars was far greater. His maps were more elaborate, covering greater areas and on larger scales.

In 1801 Napoleon ordered his Military

Survey Section to prepare the "Map of Bavaria" on the scale of 1:100,000. It was never completed. In 1806, for the war against Prussia, he had a series of maps of northern Germany made on a scale of 1:100,000, which, for use in the campaign against Russia, was expanded to 428 sheets, reaching clear to the Drina. From there on to Moscow he made use of the 79-page, 1:500,000 series of maps which had been made by the Russian Field Marshal General, Count von Munich. On all his reconnaissance trips he was accompanied by an infantry guardsman with a pack full of maps, and on his campaigns by carts filled with map material—probably the first mobile military map rooms. He took his map office with him into Russia. In 1812, however, under Colonel d'Alba, it and its staff together with all its map material fell into the hands of the Cossacks east of the Berezina. The lack of maps resulting from this loss was very keenly felt later.

A similar misfortune befell the French Army in the campaign of 1870-71 when it was again richly equipped with 1:100,000 maps of northern Germany and 1:80,000 maps of the Rhineland, but without a single map of France itself. Resupply of maps for fighting in their own country failed them, however, since their entire map material had been moved from Paris to Brest for safety, but they were unable to locate it there. As a result the Germans had better maps of France at their disposal than the French.

Germany, 1915-45

Where before only the highest commanders had maps at their disposal, each unit of the German Army in World War I was provided with a map.

The artillery had abandoned its open positions for concealed ones and artillery survey battalions were organized. On their work the great artillery battles of World War I depended.

After the suppression and prohibition

of military mapping by the Versailles Treaty of 18 June 1919, practical mapping in Germany was placed under the direction of the Minister of the Interior. A gradual simplification of mapping was instigated to eliminate the confusion of survey data that had resulted from the uncoordinated efforts of the past.

The defeat of 1945 destroyed the results of this coordination with the proclamation which made surveying a matter pertaining to the individual constituent provinces of the Reich.

In contrast with the German Democratic Republic with its central office for all survey officials and affairs, there is no central mapping control at present and the attainment in the future of the mapping uniformity of the past is questionable.

After World War II northern Germany continued to strive toward survey simplification, while southern Germany held the view that surveying could be best accomplished on a state rather than federal basis. In addition, almost all the original printing plates had been lost and the different states are now obliged to elaborate them in accordance with their needs. After fruitful rivalry on the part of almost all the state survey officers in the 1:100,000 map work, an agreement was reached in favor of the master sheet of the Bavarian Survey Office which had appeared in 1952.

Outside of the surveying units which supplied command and troops with an adequate number of maps of various issues and which had the further mission of procuring the data necessary for the use of the artillery, the German Army had no organization for general cartographic missions. The trigonometric as well as the cartographic requirements for general staff use prior to World War II had been effected through the Reich Defense Ministry. With the start of World War II, however, the Army Field Service assumed the responsibility for this function.

It was one of the missions of the German General Staff, in collaboration with the civil survey authorities, to obtain in time of peace the maps the army would need. In time of war it was the mission of the military map units to supply the army with those maps that would not be delivered to it as supply items. Hence they made many special maps of fortifications, positions, and traffic routes.

Large-scale maps often had to be made up for artillery use for flash-ranging reconnaissance, and fire adjustment.

Lack of uniformity in point of reference grids on the maps of the army, the Luftwaffe, and the navy often made mutual understanding impossible in combat. Thus the targets reconnoitered and reported by the Luftwaffe could not be communicated by the army or navy artillery.

Military Photography

The Austrian and Italian Institutes of Military Geography had been active in the employment of photogrammetry for topographic purposes since the turn of the century. The compilation within a period of 7 months of a practical map collection based on aerial photographs by the Institute of Military Geography of Florence was decisive for the success of the Italian operations in Abyssinia in 1935.

In Germany in World War II ground and air photogrammetry was employed and furthered as an indispensable auxiliary aid to the army for the solving of problems in military, surveying, economic, technical, and cultural fields. Naturally, this resulted in an accelerated development of apparatus and methods.

Military surveying continued to develop as a result of artillery map firing over continually increasing ranges. The farther the guns ranged, the more necessary the presence of trigonometric points in the position area became. These data also had to be obtained in peacetime in possible artillery deployment areas. Therefore,

around 20 groups of the officials of the Army Map Office and Field Survey Services worked on the creation of the reference-point network over a very large area, unfortunately, however, without uniform or definite supervision by the general staff. Hence a large number of reference points were subjected to calculations but the co-ordinate indices were carefully stored away in great secrecy in various locations. Other groups, at the same time, were occupied in displacing stones and coordinate markings "in order to deceive the enemy." This unsystematically conducted surveying often resulted in the misdirection of artillery fire.

In the remaining front sectors the artillery found usable reference points only in the army areas where the Army Survey Service was under the direct control of the artillery. The divisional and army artillery received the necessary survey data for successful fire direction and activity only as long as the survey batteries of the observation battalions were in action.

At the beginning of World War II the absence of a carefully directed, uniform Army Military Survey organization as opposed to the existing Field Survey organization made itself felt to the disadvantage of the artillery.

Heavy railway artillery was in position but unprepared for firing on decisive days on the home soil because the necessary trigonometric data was not at hand.

During the course of the war, so long as the survey batteries of the observation battalions existed, the German artillery was able to make its calculations with uniform survey data for all the artillery of the corps.

The work of the German sound- and flash-ranging batteries was entirely satisfactory in both its mobile and positional forms of combat, as long as sufficient and identical survey data could be supplied to both the surveying batteries and the firing artillery. Unfortunately, however, the

number of these batteries was far too small.

Where accurate data was available, especially during the early part of the war, the German artillery was often able to contain superior enemy artillery and tank forces for considerable periods of time with well-aimed and concentrated fire. Prisoners repeatedly confirmed that the German heavy artillery fire was most destructive and because of its extreme accuracy in surprise firings was the most feared.

The disbanding of the survey batteries in 1942 was more serious for the artillery since the army survey batteries were not able to offer it any aid in obtaining the basic information it required. Throughout the army combat zone the artillery could find no usable reference points. Fire direction, of necessity, became slow and less effective because the firm connecting element of surveying was absent. Surprise fire concentrations were no longer possible since fire adjustment was always necessary. The infantry had to pay with its blood for this weakening of the artillery.

Firing with the aid of aviation was possible for the German artillery only when the Germans possessed air superiority: in the fighting on the Eastern Front with fighter protection; on the Western Front temporarily in 1940, but not, however, during the years of 1944 and 1945.

At a few points of main effort during the last year of the war, and by means of the employment of fire-control batteries, the fire of up to 15 carefully surveyed batteries or battalions could again join in effective fire concentrations in support of the infantry.

The French artillery is well-known for its mathematical accuracy, making precise surveys before the opening of fire. One-third of the French artillery officers are given exemplary training in mathematics, ballistics, and surveying in their artillery academy. This good training was re-

flected in the outstanding work of the French artillery in World War I. The fire of the French artillery was almost equally good in World War II. Through its precision and effectiveness it saved the honor of the French Army in 1940. Based on good trigonometric and cartographic bases, this fire constantly fell accurately on its targets—which would have been unthinkable without good survey data.

In 1945 the American artillery was faced by no adversary who was strong from the standpoint of artillery; that is, who possessed heavy artillery, sound- and flash-ranging equipment, survey units, and artillery observation planes in sufficient numbers. In contrast with this the American artillery did possess a sufficient number of artillery observation planes for its fire adjustment and the necessary air superiority to permit their employment. For this reason the American artillery was able to achieve accurate fire without the exact survey usually required for the employment of modern artillery.

The Soviet artillery received its survey data on the basis of graphic evaluation from the topographical companies belonging to each regiment. Data arrived at by trigonometric means or sound-ranging reconnaissance appeared to be unknown. For this reason, well-concealed firing positions had no need to fear the Soviet artillery if they had not been spotted by agents, observers, or aerial photography. The Soviet artillery fire was extremely accurate, however, when it could be conducted by flash-ranging stations or forward observers.

Reconnaissance

Of all German reconnaissance means, aerial reconnaissance pushed most deeply into enemy territory.

Short-range reconnaissance was usually conducted by visual means. The prerequisite for this procedure and for mutual understanding was that both the flier and

the army ground station possess maps with identical reference grids.

Tactical and operational long-range reconnaissance was, in general, conducted by aerial photography with a hand camera aimed obliquely or with an aerial mapping camera aimed perpendicularly. Important information was often provided for the command by photographic reconnaissance. It proved best for the Luftwaffe to interpret the photographs, that is, to pick out, identify, and designate the targets on the map and for the army to localize the target by determining its position as expressed by coordinates.

Map construction and correction was conducted in close collaboration between the Luftwaffe and the army survey and map battalions in cooperation with the photographic detachments of the map sections. When maps of large areas were desired and adequate time was available, a systematic plan for photographic flights was set up and the maps were usually produced by the Luftwaffe at a central station.

Local photographic requirements were met by the army survey and map battalions, assembled to form aerial mosaics,

and usually used for map corrections. The army survey and map battalion, therefore, always constituted a liaison detachment to the photographic section of the Luftwaffe. For the interpretation of the photographs, either maps of as large a scale as possible or "aviation control points," that is, terrain points visible in the photograph which had been trigonometrically located by an army survey unit, were used. The value of a photographic map proved to be contingent on the value of the data used in its interpretation.

Concluding Observation

In this historical review it should have become evident that the expansion of operational areas and the development of technique in all fields has constantly made greater demands on the survey and mapping services. These demands must be met by civil topographic organizations and military survey services with respect to the organization, compilation and rapid supply of maps, and the acquirement of increasingly accurate data. If not, the defense of our national soil by our armed forces could well fail through lack of maps and survey data.

A New Approach to Tank Killing

Digested by the MILITARY REVIEW from an article by Captain M. S. Grewal in the "Military Digest" (India) October 1955.

THE field gun and the machinegun produced immobility on the battlefield. With the invention of the tank, mobile operations again became possible during World War II. The father of armor, General Heinz Guderian, has stated:

Tanks—properly employed, needless to say—are today the best means available for a land attack. . . . For, to carry out great decisive operations it is not the mass

of the infantry but the mass of the tanks that must be on the spot.

To support this argument he further stated:

The chances of an offensive based on the timetable of artillery and infantry cooperation are, as a result, even slighter today than they were in the last war. Everything is, therefore, dependent on this; to be

able to move faster than has hitherto been done; to keep moving despite the enemy's defensive fire and thus to make it harder for him to build up fresh defensive positions; and, finally, to carry the attack deep into the enemy's defenses.

These principles were put into practice during the early stages of World War II by the two great captains of armored forces—General Guderian and Field Marshal Rommel—and the entire world began to think about the great potentialities of the new weapon.

As was to be expected, antidotes to the tank menace were thought out quickly, and measures taken to check the tanks. Many different devices were employed in the antitank role and as a result of considerable experience, are being taught today in various army schools.

Tanks must be checked and destroyed as soon after they cross our borders as possible. General J. F. C. Fuller has rightly pointed out:

In armored warfare the tactical aim is the destruction of the enemy's armor. Seldom can armored forces be fixed, because not only their mobility enables them to refuse battle, but also to disengage after engagement.

Our existing antitank resources are inadequate and have to be supplemented with more dependable and effective measures.

Present Resources

The present antitank resources of any country may be grouped broadly into active and passive resources. From experience, however, it has been found that the two groups of antitank resources cannot really be applied to operational conditions individually. The most effective antitank means would be a combination of the two groups suitably adapted to fit in with the requirements of terrain, availability of materials, time and labor, enemy order of battle, and weather.

The active resources include artillery antitank guns; infantry weapons, bazookas and recoilless guns; tanks; ground attack aircraft of the fighter-bomber class; and concentrations of indirect medium and heavy artillery fire.

Passive resources include minefields, natural and artificial antitank obstacles, and others. As mentioned earlier, these passive resources are not an effective check on the tanks by themselves. They can impose caution and delay but not effectively stop tanks unless they are "married up" with the active resources. The three governing principles of concentration, surprise, and cooperation must always be borne in mind for all antitank measures.

The New Approach

Experience in the past has shown that, despite the utilization of various antitank resources in different combinations, the ingenious tank commander has been able to achieve his aim through exploitation of the basic attributes of this formidable vehicle of war. These attributes of firepower, armor protection, and rapidity of movement combined with concealment and stealth offer scope for the employment of tanks under varying circumstances. One has, therefore, to look outside the sphere of present antitank resources to find an effective check against them. Despite all the progress made in the aeronautical sphere, the use of aircraft against tanks has not been exploited sufficiently.

Aircraft was used extensively as tank-killers during World War II and later in Korea. The traditional type of aircraft for this job has been the fighter-bomber; the normal antitank armament has been the heavy machinegun, the light bomb, the cannon, the rocket projectile, and napalm.

However, the aircraft in its present form is only partially effective against tanks. General Fuller, commenting on the Fifth Libyan Campaign, has written:

Tactically one of the most remarkable things about this brief campaign was that, in spite of British command of the air, Rommel advanced over 350 miles in 17 days without any air support at all.

The sonic or subsonic speeds of the modern fighter render attacks on individual tanks more and more ineffective. A moderate amount of concealment will render a sizable group of tanks invisible to a plane flying at speeds of 600 to 700 miles an hour. Only larger concentrations of armor might, in the future, attract the attention of the aircraft. This high-speed factor in aircraft which is so desirable in modern fighters at once conflicts with the major requirement of antitank defense. Mass killing weapons cannot be employed in forward areas by the aircraft to offset the aiming and locating difficulties due to obvious reasons.

If higher speeds and altitudes are to be maintained which are necessary for a fighter's primary role of clearing the skies of hostile aircraft, then it is now unsuitable as a tank-killer. Since this is so, is there a suitable substitute available to fill in this serious gap in the antitank defense? To answer this question one must look back to the basic principles of antitank defense. According to General Guderian:

Should the defense succeed in producing a defensive weapon which can penetrate the armor of all the attacker's available tanks, and should he manage to deploy such weapon at the right time and in the decisive place, then the tanks will have to pay heavily for their successes or may even fail altogether if the defense is fairly concentrated and sufficiently deep.

Weapons have already been developed, or can be developed, to ensure penetration of the protective armor of any tank from reasonable ranges. The main requirement that remains to be fulfilled, however, is the deployment of "such weapons at the

right time and in the decisive place . . . fairly concentrated and sufficiently deep." Only when this requirement is fulfilled can one hope to succeed in effectively checking and killing the tanks before they overrun the vital areas. This requirement of proper concentration in depth of defensive weapons at the right time and place demands the greatest amount of inherent flexibility of the defensive weapon to be used against tanks. The most flexible weapon (or vehicle) of war at hand today is undoubtedly the aircraft, for it alone can guarantee unparalleled flexibility both in time and space. While considering General Guderian's principles for defense against tanks our thoughts turn again to aircraft.

The present-day aircraft has not been able to afford maximum flexibility for operational use due to all or some of the following reasons:

Its dependence on airfields which may not always be available or capable of early construction in forward areas.

The highly complicated maintenance system which, if not fully established in forward areas, can seriously affect the "availability state" of aircraft.

Effect of bad weather—even the so-called all-weather aircraft have their limitations particularly for tank-killing.

The present system of control on combatant aircraft and the still far from ideal army-air cooperation system.

It follows, therefore, that if the basic principles involved in tank-killing have to be fulfilled, the opportunity still lies in the third dimension and for that the drawbacks mentioned above have to be removed. The army's requirements, insofar as tank-killing is concerned, boil down to the following:

1. To have an "air vehicle" (which may be of the shape of an aircraft) capable of operating in tank-killing roles away from the roads cluttered with vehicles and refugees.

2. This air vehicle should be able to

operate from ordinary fields having rough surfaces or even from tilled land.

3. It should be simple to operate and maintain. Maintenance should not be so complicated as to put the vehicle out of the purview of normal maintenance schedules.

4. It should be capable of flying "low and slow" and should be able to make use of cover afforded by buildings and trees. In other words, it should be able to stalk tanks at "zero feet." This capability will assist greatly in avoiding radar detection and will delay visual sighting by anti-aircraft weapons, thus indirectly affording it protection. "Zero feet" operating capability, like the helicopter, would enable it to operate even in moderately adverse weather conditions when normal aircraft are grounded.

5. It should be able to stalk tanks in all types of terrain and carry weapons to kill them when spotted—guided missiles, if necessary.

Recent Developments

The French have been giving considerable thought to the problem of tank-killing from the third dimension ever since their liberation after World War II. They have produced a prototype called the *Potez 75* which meets most of the requirements of an army vehicle meant for tank-killing. Trials are in progress to test the machine under simulated operational conditions—the producers insist that "it is a machine which must be considered as an army missile launcher that flies." Critics have praised the machine after handling it and agree with the producers in regard to its role and control. One critic has said: "I would repeat here that the machine is not to be regarded purely as an aircraft, but as a missile launcher for the army."

The performance figures available on this prototype indicate that the machine can become airborne over rough ground after a run of approximately 100 yards

(8 seconds ground run) and can land in about the same distance. It carries a crew of two—the pilot and the missile controller. The maximum speed with full load is 171 miles an hour, cruising speed 140 miles, landing speed 68 miles, and the stalling speed only 55 miles an hour. The disposable load is 1,320 pounds including missiles and 300 rounds of 0.5-inch ammunition; its range is 435 miles.

Obviously, more progress and thought is required to produce a vehicle that will meet all the requirements of the ground forces in an antitank role.

This type of aircraft, provided its maintenance requirements allow, could accompany forward army units due to its capability of operating from any type terrain. It could also provide enough hitting power to break up armored spearheads at appreciable ranges. As brought out by Major General J. N. Chaudhuri, in semideveloped countries with a scarcity of communications maximum firepower with minimum clogging of communications would be necessary. The *Potez 75* type air vehicle would meet this requirement admirably. Being comparatively safe from hostile fighters, like the helicopter this machine could operate when air superiority in the theater had not been entirely gained. Apart from operating in the tank-killing role it could, in addition, be a good reconnaissance vehicle.

This type of machine would not be unduly handicapped by bad weather and, like the helicopters under an umbrella of clouds, it could still operate with comparative immunity from hostile fighters and play havoc with enemy motorized columns struggling through mud and slush on roads and tracks.

Allotment of these machines to divisions and independent brigades would go a long way in making field formations more and more self-contained in antitank resources. The air force could then be relieved of many tactical duties and thus be free

to undertake more important missions against hostile air forces or could concentrate better on strategical strikes and reconnaissance. Since the crews (flying and maintenance) would be found among army units, the field commanders would have direct control over them and thus save vital time in ordering sorties and executing tasks.

Other advantages that these machines would have for operational use are that they would not be "grounded" due to hostile attacks on airfields like conventional aircraft, and they will not require airfields from which to operate.

The artillery air observation post flights also could be equipped with this type of aircraft. The gunner pilots could then not only direct "shoots" but could operate effectively against the enemy whenever the opportunity arose.

The allotment of this type of aircraft undoubtedly would tend to make field formations a bit unwieldy and place an extra burden on the administrative services. It will also create more and more "specialists" in the army. Protection against hostile fighters will still have to be afforded to these machines, and antiaircraft resources within the formations possibly will have to be increased. Ultimately, however, the advantages of having such a machine at the disposal of field formation commanders would heavily outweigh the

disadvantages. Experience gained after extensive use of the machines in a few selected formations would help to remove any defects that come to light.

Summary

For countries having the commitments of defending land frontiers against possible armor attacks it is vital to have an effective weapon to kill or neutralize tank spearheads before they become too dangerous. The means and techniques so far employed in this sphere have not proved to be adequate to meet the task.

A vehicle, capable of operating in the third dimension but not bound to the airfields, is required that could effectively undertake the task of tank-killing; be simple enough to be operated and maintained by forward army units without unduly encumbering them with difficult maintenance problems; and be able to operate under the direct control of local army formation commanders. The flexibility offered by the ranges and speeds of this vehicle, coupled with its ability to operate from rough ground during moderately bad weather and under unfavorable air situations, would enable a field formation commander to achieve concentration and depth for defense both in time and space—a vital factor in antitank defense. Such a vehicle would be ideal for our defense requirements.

The only logical remedy for a situation in which we cannot match the enemy man for man lies in the development of capabilities which nullify this enemy advantage. Fortunately, the controlling element in military operations is not mere manpower, but effective firepower, delivered at the time and place of decision. And in the development of such firepower, and the means of its effective delivery, our technology and our massive economy give us a long lead over our nearest competitors.

Assistant Secretary of the Army Chester R. Davis

The Rise to Power of Communist China

Digested by the MILITARY REVIEW from an article by Captain D. H. Morgan in the "Australian Army Journal" December 1955.

TO THE reasonably well-informed citizen of the West, communism, bred in poverty, sickness, ignorance, and illiteracy, seems to be a loathsome substitute for freedom. Among the Far Eastern peoples, however, communism arises as a rich attraction wherever the alternatives are starvation and insecurity. In their minds even a totalitarian government is better than a bad government or no government at all. If we appreciate the wide gap that exists between our respective ways of living and our respective scientific advances over the past 200 years, we should be able to understand, at the outset, the forces which drive the Asians in their search for a better life.

The Manchu dynasty which had ruled China since the early seventeenth century was replaced in 1912 with a Chinese Republic marking the end of an era, for the new Chinese Republic was never to assert its influence over its neighbors in the same degree as its predecessors. Under the Republic, China gradually ceased to be a power in the Far East.

In 1927 the Chinese Communist Party, which in its initial form bore little resemblance to Soviet communism, split from the Kuomintang or Nationalist Party, and set up a rival republic in the mountains of southeast China.

Communists and Nationalists cooperated uneasily against the Japanese in World War II. At the end of the war the final stages of civil war were resumed. By 1949, with passive assistance by the USSR, the Communist Chinese had driven the Nationalists off the mainland to Taiwan, where the latter's government still holds forth.

Since 1949 by exploiting racial hatreds, revolutionary violence, infiltration, and armed force the Communist Chinese gov-

ernment has struck throughout Southeast Asia in an all-out bid for dominance in the area.

From a beginning where Chinese Communism depended on the desires of millions of peasants for fair land settlement and a form of government which would secure for them the fruits of their labors, under Mao Tse-tung the Communist movement in the past 30 years has adopted the Marxist line. His goal has changed to that of domination of Southeast Asia.

China's Outlook

If Mao Tse-tung were to adopt a policy of friendship with the West no doubt China would receive many of the privileges at present denied her in the United Nations and throughout the free world. There are strong reasons, however, for China's maintaining a belligerent and aggressive attitude in Far Eastern affairs:

First is China's recovery of big-power status. Mao has built a strong army, restored national unity and, to a great extent, stopped the decay inherent in the governments of his predecessors. He has in effect rebuilt China. She has, in no sense, any desire now to succumb again to the yoke of Western dominance! Accordingly, she views any Western attempts to befriend her with suspicion. Second, her associations with the Soviets bring her military aid, economic assistance, and above all, through their alliance she need have no fears for her borders with the USSR for the present.

The third reason for China's attitude toward the West is her communistic affiliation with the USSR—the ideological rebuttal by China of non-Communist doctrines. However much her doctrine may be modified from those of Lenin and Stalin, her aim remains the same—totali-

tarian government of the homeland, maintenance of the military state, and domination of her Asian neighbors. In these matters she is "on the party line" of domination by force and must remain so if she is to retain the character of her government.

The Western Powers

The United States interests in the Far East have always been, and still are, mainly to provide a military buffer in the Pacific Islands against attack of the North American mainland. Since World War II the United States has taken a world lead in the fight against communism and asserts the authority of the non-Communist world in the Far East by means of her island defense chain.

Great Britain, France, and other European countries have maintained considerable interests in the Far East during the nineteenth and twentieth centuries. Their colonies there have thrived and provided in effect the lifegiving elements of material and finance on which their empires have succeeded. As long as China remained weak, divided by internal strife, and as long as their supremacy in the Far East remained unchallenged, the European influence on the area could not be unseated.

The balance changed when Japan rose to challenge European dominance. The effects of Japan's rise, coupled with the resurgence of China in the form of a strong Communist state, have overcome European influence and privilege in the Far East; they have permitted China to reassert her strong influence over the entire Far Eastern area.

Present Attitude

It has been evident to all the Western Nations since 1945 that the old domination of the Far East is quite impossible now in view of the resurgence of China. Their attitude inclines toward accepting China's new position even at the expense

of the colonial systems. A Nationalist or democratic China, free of the Soviet yoke, is their goal; Communist China is not acceptable. That is the reason why Taiwan receives United States protection, why Communist China is refused a United Nations seat, and why most of the Western governments have yet to recognize the Communist regime as the government of China, even though it controls the majority of the Chinese people.

Unless the Western Powers impose a strong deterrent upon China's so-called legitimate interests, it is apparent that China will overrun all of Southeast Asia for she is prepared to sacrifice national progress for military adventure whenever the results will further her totalitarian aims.

Based on experiences to date with the Chinese Communists it would seem unwise for the Western Powers to rely on the restraint of a regime of that kind. The combination of national fervor with delusions of Communist ideology have proved and can, in the future, prove dangerous.

China's Neighbors

The Republic of the Philippines constitutes America's major stronghold in the southwest Pacific area. Its government is closely affiliated to the Western cause, and can be certain of Western aid in keeping out communism. It has had a marked degree of success in putting down the Huks, a Chinese-sponsored band of revolutionaries, and so long as American garrisons remain on the islands, little harm can accrue from Moa's influence.

The island of New Guinea is divided into British New Guinea, an Australian protectorate under the United Nations, and Dutch or West New Guinea, where Dutch and Indonesian interests are in conflict. This is the last outpost of Dutch colonial power in the Far East. Here it is of advantage for the Communists to support Indonesia's claims to West New

Guinea, while Great Britain supports Holland's case. The outcome is still in doubt.

Burma and Indonesia have several common postwar features. Both Burma and Indonesia have won their independence from foreign rule since the last war. As the attainment of independence is considered by Mao to be the first step in a country's indoctrination to communism, the Communist Chinese government extends a calculated diplomatic courtesy to both countries, no doubt hopeful of further revolution in them wherein their Communist leaders would turn to China for help.

The Chinese leaders appreciate fully the value of Burma in agriculture, and her strategic position astride the route between Near East and Far East. They are fully aware of the natural resources of Indonesia. There are sufficient Chinese among the populations of both countries to provide Mao with an excuse for interfering with these states, ostensibly to liberate his Chinese affiliates.

Both countries, although repressing communism within their borders, have expressed a policy of neutrality in the struggle between East and West. Mao appreciates the value of neutrality over belligerence in these areas and until he decides on an appropriate time to "liberate" them he will be content with their present peaceful attitude.

Indochina is made up of the independent states of Vietnam, Laos, and Cambodia. For centuries Vietnam has been the most powerful of the three. While Laos and Cambodia stem from a Hindu civilization, Vietnam has been tied to China since before Christ.

For the past century, Indochina has been a territory under the French Union through conquest.

Indochina's ties with communism date from 1925 when Ho Chi Minh organized a revolutionary youth movement for which

he later received international Communist recognition. This party adopted the Communist "tag" in 1930.

After the Japanese occupation of Indochina during World War II, Ho Chi Minh organized his Vietminh in China embracing all Indochinese Nationalist factions. It was with Nationalist Chinese support that Vietminh was enabled to operate in Indochina during the occupation. This group came to power at the end of the war as a Nationalist Vietnamese government favorable to the people.

In reasserting prewar authority on Indochina, the French literally forced Ho Chi Minh's following into the orbit of the Chinese Communists. In 1949 upon Mao's attaining power in China, the Vietminh pledged unequivocal allegiance to international communism in return for Chinese aid, and set about the liberation of Indochina from the French. Their successes culminated in a vastly favorable but uneasy truce with the French in 1954, wherein the Communists control northern Vietnam and south Vietnam remains a republic within the French Union.

China's interest in the Indochina struggle stems from her ideological sympathy with the Vietminh cause, and because her own security is enhanced with the installation of a Communist form of government in this neighboring state. She is also well-satisfied to have the Vietminh in her debt for assistance given against the French.

No doubt she looks also to the future when reestablishment of Chinese authority over Indochina, lost to her since the ninth century, will be a reality.

Thailand and Malaya

Like Burma and Indonesia, Thailand and Malaya have a common interest for China. In both cases the Chinese approximate in numbers the strength of the native populations and in fact control most of the business enterprise of the two

states. During the last war it was they who constituted the main resistance to Japanese occupation, while the natives maintained an attitude of indifference to the occupying forces.

The return of peace brought a renewal of prewar policies in both Thailand and the Federated States of Malaya. In the eyes of the Chinese minorities these were discriminatory against them. The Siamese Government strengthened its anti-Chinese legislation. The British administration in Malaya did little to appease its Chinese subjects. As a result, unrest in both countries continues to this day.

China's concern for Thailand lies in the possibility of attack against her through this area. Installation of a friendly government in Thailand would provide a further military buffer on her southern borders.

Mao may well assist the Chinese population of Thailand in unseating the native government, installing in its place a Communist regime not only friendly to China but one which China could in turn dominate at will. The excuse for his actions may well be the liberation of the Chinese population from Siamese discrimination.

In view of the distance between the two countries, and China's inability to maintain secure communications over the South China Sea direct interference in Malaya by China is not likely in the foreseeable future. If neighboring Thailand were to enter the Communist fold, however, Malaya's present immunity would be modified.

Unless and until the Malayan Communists are able to receive active outside assistance, the Communist movement there is doomed to failure. British arms are pledged to restore peace and order there, and British foreign policy is pledged to offer dominion status to Malaya. As long as success for communism in Malaya is unlikely, Mao will not support it.

Here Mao sees the virtues of awaiting

the establishment of the independent government promised by Great Britain. The new government, bound to include representation of the Chinese minorities, will be a far easier nut to crack than the existing British regime.

Undoubtedly the Communist movement has a firm foothold in Australia and New Zealand, and will require untiring vigilance by their governments to curb its influence on their affairs. It is apparent, however, that such Communist activities as do exist are directed by Moscow and not by the Chinese.

China is likely to be satisfied if Australia and New Zealand recognize her new Communist status and reintroduce reciprocal trade, thereby providing her with goods otherwise unobtainable, and additional markets to bolster her economy.

From the standpoint of the Western Nations, the advent of China as a major power places a far greater significance on the southern dominions in their strategic positions athwart the eastern defensive bastions of the Commonwealth, and indeed the entire free world. Increased commitments in peace and war will be their lot, with resultant enhancement of prestige and diplomatic authority throughout the world. These countries are inevitably destined as the future strongholds of democracy in the southwest Pacific area.

They may well play the same mediary role between the Southeast Asian powers and the United Kingdom, which Canada now fulfills between the mother country and the United States.

Remedy

Communism has as its goal in Southeast Asia the subjugation of the Asian peoples through an autocratic government in Peking. Countering Communist encroachment in Southeast Asia is no simple problem, and there will be no simple solution to it.

No matter how one approaches the problem, the first logical step lies in an appreciation of the suspicions and mistrust of those Southeast Asian territories who for years have considered themselves the pawns of prejudice and racial discrimination by the West. In so doing one can better appreciate their failure to observe, as we see it, the real gulf between communism and democracy, and why they are reluctant to join our side without reservations. We must help them to overcome their very real fears of Western democracy. While we denounce communism's doctrines and methods as strongly as we do, we must demonstrate our own wholehearted sympathy with the Asian struggle for liberation from hunger, misery, and foreign rule. The Communists could not have succeeded over 30 years without playing these ideals in the face of the Asian people. If we are to succeed at all, we shall have to start beating the same drum!

The second step is military preparedness by the Western Nations used at the proper time and place to stop Communist aggression. Participation in the Southeast Asia Treaty Organization is a wise forward step in checking the spread of communism.

The third step lies in the economic and social development of the Southeast Asian countries, to assimilate therein the standards at which the Western Nations have arrived after two centuries of rapid progress.

The United Nations is showing us the way through its Economic Commission for Asia and the Far East, and its special agencies such as the World Health Organization, Food and Agricultural Organization, and other projects. The International Bank has financed much development in these areas. The American Far Eastern Aid Program and the Commonwealth Colombo Plan have also helped to foster the foundations of economic independence in these countries.

But the advances made are not enough! We hear today of Soviet offers of similar aid to Asian countries and unless we care to see Southeast Asia's economies interwoven into the Communist sphere of influence, we shall have to rise to even greater heights of generosity in promoting our own kind of social and economic well-being among these people.

To suggest that democracy, freedom, or peace can be bought in Asia for dollars or pounds alone is to evade the real issues which face us in our efforts to halt the spread of communism. We must appreciate that what we are doing, by economic and social contributions in Southeast Asian countries, is to help them by providing the wherewithal for them to help themselves. Only the efforts of the people themselves can finally erect within these countries the bulwarks of democracy.

Our major contribution will be by cooperating in a partnership of mutual respect, support, and understanding with genuine leaders of the Asian peoples. Their main project must be to organize governments which are strong enough, free, and incorruptible enough to make use of Western aid support in establishing law and order, prosperity and freedom, which alone are the only real counters to the appeal of communism.

Conclusion

For Mao Tse-tung the successful conclusion of the Chinese civil war has resulted in the establishment in Peking of an autocratic and strong Communist form of government, whose ultimate goal is the control and subjugation, not only of the Chinese people, but also of the people of Southeast Asia. Thus into the vacuum left in Asia by the withdrawal of European interests marches communism—the one limitless commodity available for export anywhere in the world today.

In the social and economic fields, communism has made great strides forward

for China, marred only by her unwillingness to devote major resources and energies to such improvements at the expense of military adventure.

The Chinese Communist government may not be intent upon a career of aggression and expansion in the southwest Pacific area as its propaganda would insinuate, but China's determination to pursue what she claims to be her legitimate interests has already led her to ignore the legitimate interests and security of other people, and may do so again.

The only deterrents to the spread of communism in Southeast Asia and the world today are the ability of the Western Nations to meet force with force, and our ability to contribute in assisting the

countries of the southwest Pacific to gain self-sufficiency of government.

We must appreciate the suspicions and the reservations of the Southeast Asian countries with whom we must deal. We must indicate by our actions, our wholehearted sympathy with their desires for relief from hunger, misery, and outside interference.

We must provide through economic assistance the wherewithal by which these countries will be able to help themselves out of their present difficulties. We shall have to assist them to organize good government where law, order, freedom, and prosperity, the real deterrents to Communist dominance, may operate without fear of Peking or Moscow.

The Limits of What Is Possible

Translated and digested by the MILITARY REVIEW from an article by former Lieutenant General Kurt Dittmar in "Wehrkunde" (Germany) March 1956.

IN THE correspondence of Frederick the Great during the latter period of the Seven Years' War, we find a quotation from Horace which the king employed for justifying conscious limitations of his military aims and warfare: "*Sunt certi denique fines!*"—"Somewhere, finally, there are definitely limits!" Considered in itself this is a trite, self-evident statement confirmed by all human experience. But when Frederick at Leuthen, "against all the rules of the art of war," attacked and defeated an adversary who was nearly double his own strength, he raised this trivial phrase almost to the status of a principle. He had gone up to and beyond the limits of what seemed to be possible and in doing so had learned to practice moderation. He had recognized the limitations which the force of circumstances presented in opposition to his will.

The necessity for keeping one's aims within the bounds of possibility certainly is not confined to the military field alone;

the danger of overstepping essential bounds exists universally in human activities. But combat and war, as a result of their peculiar nature, represent the borderline zone. In every fight with a serious adversary the instinct for self-preservation engenders the urge to go beyond the bounds set for the usual man—that is, the individual who is not under military law or the obligation to fulfill military duty. Widening out the limits of possibility is the prerequisite for every superior accomplishment, hence the preliminary condition of victory—yet always, an excess may result in loss or defeat. An extremely narrow path extends between the one and the other to the goal, between the danger of not doing as much as is necessary out of fear of overextending, and the danger which invariably exists from disregard of these limitations.

The winning or loss of a campaign or a war may be bound up in the question of whether the abysses which lie on either

side of the path are successfully avoided. Clausewitz warns of these abysses. His frequently quoted saying: "The greatest daring may be the greatest wisdom," has rightfully become a central principle of the theory of war for the simple reason that faint heartedness and hesitation naturally are much commoner to man than the opposite qualities. The warning he gave in another place against "running risks contrary to the nature of things" must not be taken any less seriously. The "nature of things" is manifested in the limitations they impose on our will. Hence this warning is an admonition to respect bounds stemming from circumstances over which the human will has no control.

Essential and valuable as these admonitions doubtless are in a general sense, they are of no aid in eliminating the dangerous factor of relativity. The real problem in the limitations concept occurs when we find ourselves faced with the necessity for determining the bounds of the possible in an individual, concrete case. Naturally, there will be cases in which the circumstances will determine the bounds of the possible with sufficient accuracy on the basis of universally recognized experiences. But the more evenly matched the possibilities appear to be, the more multiformed the ways in which the "on the one hand . . . on the other hand" influences the decision. The more the final decision is transferred to the intuitive faculties of the responsible party, the more it becomes dependent on his estimate of the circumstances. His objective evaluation, in the form of approximate values only, often becomes possible only as a result of success or failure. And so, it is precisely when—to use an expression from Clausewitz—everything "hangs on the thread of imagination" that the determination of the bounds is beset by the danger of relativity.

In such cases everything is more or less dependent on the character of the one making the decision. Even in the case of ex-

tensive agreement of the perceptible and estimated outward circumstances, the optimistically constituted, the daring, or foolishly daring person will draw entirely different conclusions for his action than the individual who is inclined, by nature, toward pessimism, foresightedness, and the pursuance of a safe course. Experience and habituation to critical situations will likewise, and even with the same personality, give rise to other decisions than would be the case without these supports.

Changing Limitations

Another difficulty is the fact that every war, at least every military era, develops its own standard of what is to be regarded as possible and what is not, depending on the intensity of the combat and warfare and the intellectual and moral forces that are brought into action in them. For this reason conventional standards of what is possible or impossible can exist only with reference to the era and adversary considered. The marching and combat feats that Napoleon required of his troops certainly would have appeared impossible to earlier generations. The battles of World War I, lasting for weeks, exceeded all the standards of the past. In the German invasion of the Soviet Union, actions that against any other enemy would have been considered as beyond all conceivable limits rapidly became an almost normal thing.

But this does not invalidate Frederick's quotation from Horace. Only the seemingly unlimited extensibility of the bounds of the possible is proved; the boundary has been moved farther back. This boundary of the field of action of the human will annuls none of the fundamental rules, resulting from the fact that we are still human beings, not even the one which tells us that sometime and somewhere the limits of what is possible and endurable will be reached. "Somewhere, finally, there are definitely limits," is still valid.

Hence very little must have changed with regard to the relativity of what can be regarded as the bounds of what is possible, endurable, or to be expected. The determination of the extreme limit toward which we can safely strive with some degree of success is still a matter of judgment, a matter of calculation involving numerous unknown quantities whose result will be more divined than definitely demonstrated in exact figures.

Refusal of Limitations

It has been said of the great captains of military history that they owed their success, to a decisive degree, to the ability to thrust aside bounds by the strength of their will by refusing them recognition. This is unquestionably correct, but it is not correct that this conscious refusal to recognize these bounds was tantamount to a disregard of the dangers which might be associated with the exceeding of the standards and norms of their time. It is even true of Napoleon, who so often gave emphatic evidence of the limitlessness of his will, that he sought to establish all decisive circumstances very accurately before he risked an extreme or final move—at least as long as the statesman in him did not cloud his military judgment with inordinate political aims.

It can at least be seen that wherever great captains exceeded the limits which were fixed by the determining circumstances in accordance with the concepts and norms of their time, they were conscious of the risk they were running. Thus it was a "calculated risk" and not a game of chance. They knew that every forward shift of the boundary brought risks, and necessitated certain counterweights to prevent one from falling on the slippery soil of the boundary region. That they sought for and found these counterweights mainly in the inner conviction of their own superior generalship and of their ability to spur their troops on to supreme accomplishments was part of their greatness.

But still another characteristic feature of their action is to be noted: When close to the boundary region, they made every effort to avoid excessive demands on their forces by eliminating the use of new, unexpected combat procedures or means. Thus it was never an act based on will alone, but also on intellect, when a leader of unusual greatness exceeded the bounds which circumstances had set for him. The fact that Hitler acted otherwise, and during World War II treated the exceeding of bounds more and more exclusively as a mere matter of will—*his* will—and in this way made overdemands on German strength a constant phenomenon, was one of the basic reasons for the tragic fate of the Wehrmacht and the nation.

In extreme cases of qualitative or numerical inequality there exists a far greater readiness to assign definite limits to what is possible on the basis of definite factors. This is true to a special degree today when the number and effectiveness of the weapons held in readiness furnish very definite bases for the comparative evaluation of military strength. Even Hitler, with all his inordinateness permitted himself to be influenced to temper his demands when apprised of material inadequacy on the part of his own forces.

It is important to note that the greater the extent to which material limitations set definite bounds to what is possible, the more likely will be an overemphasis of the moral issue at stake. When losses of horses assumed threatening proportions during his advance on Moscow, Napoleon stated with reproachful regret: "Horses have no patriotism!" What was this other than the resigned declaration that the "senseless creatures," inaccessible to an appeal to their spiritual driving forces, by their very nature were setting bounds to his will?

What Napoleon said of the horses also may be logically applied to matériel: The margin of play which it allows for unim-

peded human decision is narrow in comparison to the possibilities of extension of the human will. There may lurk in this a dangerous impulsion to choose the way of least resistance and seek to compensate for material deficiencies by an utmost straining of moral forces. For this reason, fixing the bounds in the spiritual domain, regardless of all necessary material prerequisites, in the final analysis remains the central problem.

Psychological Schooling

In the introductory sentences of the German Army Manual, *Truppenführung* (*Troop Command*), we read: "Demands which are impossible of fulfillment are destructive of confidence in the command and the spirit of the troops."

It is certainly no arbitrary interpretation of this sentence, which was born of the painful experiences of World War I, to see in its content a very forceful warning with respect to boundaries. For what are "demands which are impossible of fulfillment," other than an exceeding, without any compensatory resources, of what in the spiritual domain itself is enduring and to be expected?

But does not this demand on leadership present with equal insistence to every responsible commander the task of finding the narrow path between too much and too little which characterizes the boundary? Certainly!

And is not this decision completely subjective in precisely those cases where one is concerned with the evaluation of spiritual factors?

The old (German) *Royal Army Guide* stated that the officer must be "psychologically schooled," but what was taught had to do mainly with his activity as an instructor and trainer in time of peace. Nowhere was there any compilation of what the great soldiers had set down here and there in their works, their memoirs, and their letters, in the way of experiences

relative to subjective spiritual evolution. At best, there prevailed pure empiricism in this matter. There was no system which would have adapted the practical knowledge of former times to modern science and which, working from this basis, would have studied the psychological problems of a long war and of various types of war reparations.

This was the situation at the time of World War I. Even after this time we hardly progressed beyond the stage of a very few noteworthy beginnings in this direction. What appeared in writings concerning the psychology of fighting masses bore a private character without general applicability. To be sure, psychology, as something known and applied, had an important place, but only as manifested in troop command, not as something to be taught and learned. "One had it or one did not have it"—no fixed principles could be worked out in this way.

The science of man, that "most difficult object," remained far below the level of the outstanding schooling in other domains. Possibly the difficulty of the subject in itself may have operated to discourage its study.

The history of World Wars I and II showed how the lack of psychological schooling led to disastrous wrong decisions—not alone through overdemands on spiritual strength, but also in the opposite way, when the power of resistance of forces was underestimated. For example, there was the situation after the Battle of the Marne in the fall of 1914 when, through fear of the negative influence of further withdrawals on the German will to fight, the opportunity of placing the operations on a new, promising basis was lost.

Later the fact that Hitler's arguments, in spite of the experiences of World War I, impressed even thoroughly schooled soldiers of whose honorable convictions there can be no doubt shows the great un-

certainly that existed in the German Army with regard to certain fundamental points of troop psychology.

The same lack, not only of intuitive powers but simply of an understanding of psychological subsoils and backgrounds, was probably also to blame for the painful surprise with which the German civil leaders, since the summer of 1918, had seen themselves more and more clearly faced with internal collapse. It is true that this largely was the result of what psychology calls "repression"—giving no heed to phenomena one does not wish to heed—for the reason that very unwelcome consequences are behind them. But the surprise was too widespread for one to avoid the conclusion that lack of attention to psychological limitations was the result of lack of schooling.

Morale

There is ample evidence of the care with which great captains kept watch over the morale of their troops. On the basis of this, conclusions can be drawn for the determination of what is endurable and to be expected at a given moment. It is reported that Napoleon gave attention to the force of the shouting before the battle of "Vive L' Empereur," as a barometer of the fighting spirit of his troops. The halting of the winter campaign in Poland in 1806-07 is said to have been caused partly by blunt criticisms called out to him from the march columns apprising him of the low state of the morale of his troops.

This direct contact with the man at the front is naturally impossible today. The "finger on the pulse of the fighting soldier" has to be left to subordinates in this day of million-man armies—one more reason why there is need at all levels for commanders schooled in objectivity and the judgment of psychological phenomena.

At the same time it must be clearly borne in mind that the spiritual force of a unit can never be of fixed value. Hence it must

be constantly observed. This is particularly difficult since the transition across the boundary of what can be endured is often a very gradual process. The better the unit is, that is, the stronger its will to accomplish its missions and to hold out under extreme conditions, the more latent its approach to the breaking point. This often resembles the gradual fatigue of a spring which, under too great a strain, loses its ability to "give." It is precisely a unit of this type, a good unit, which makes the timely recognition of this condition particularly difficult. Too proud to show evidences of weakening, it hides its condition as long as it possibly can. Very dangerous deceptions in the sense of unjustified optimism can stem from this.

A subjective sense of well-being and buoyancy immediately proximate to a disastrous outcome can lead to fatal mistakes in judging psychological conditions—especially in cases where the wish to attain a certain end becomes the dominant impulse of the unit. These cases can be particularly dangerous because they present a false reflection of a fighting spirit which, in an objective sense, represents a capacity for *suffering*, but not for *doing*.

All such experiences can only be contributions showing the difficulty of correctly diagnosing the inner condition and emphasizing the necessity of deeper study of this difficult problem complex. The acceptance of the existence of limitations signifies little so long as the question of the limit of what is psychologically endurable is not denuded of its subjectivity.

Knowledge of the problem of the limit can never be anything more than a first step. It must be followed by a second: recognition of the need of a "therapy of the limit"; that is, prophylactic measures which are to be used whenever the boundary line is dangerously near or has been crossed.

As such, all things may be counted that are included in the time-tested concept

of "concern for ones' men" in its broadest sense. It remains a command duty of decisive significance at all levels, because in its fulfillment the human relationships between the command and those under them find their best expression.

The Cure

However, the concept of psychological therapy must not end here. No amount of "concern" can silence the questions of "why" or "what for" which always arise in cases where suffering and dying are involved and which imperatively demand an answer the closer we come to the limit of what is possible. Success in battle is still the best curative factor. On the other hand, obviously purposeless suffering and dying constitute the greatest psychological burden. The realization that "nothing is any longer of any avail," is still the worst source of moral sickness.

Actually, the fact still remains that the most important of all curative means is only conditionally placed in the hands of the soldier: the possibility of imparting a direction, a sense, to the entire military operation in which he is engaged; a sense that is clear and convincing, that recommends itself to him, and justifies his sacrifice. This is the decisive contribution which statesmen have to make. Here, the soldier can play the role only of reminder and warner.

The soldier must, however, continually seek to find a clear, obvious, and convincing aim in the operations in which he is playing a part. To make the purpose discernible will not always require "in-flaming words" nor the disclosing of operational intentions. Sober objectivity will combine very well with occasional appeals to achieve stoutness of heart. The words of Frederick the Great before Leuthen, or of Blücher on the march to Belle Alliance are still masterful examples of this.

The better the unit, the deeper rooted its military experience, the more critical it is, as a rule; and the more it feels instinctively whether or not there is a clear purpose in what is demanded of it.

A change in tactics brought about a complete change of morale in many parts of the far-flung Eastern Front in 1941-42. Where the command succeeded, at least locally, in changing from the fixed defense to free exploitation of their own operational and tactical superiority, the same units which had shown serious signs of going to pieces found almost instantly the strength for astonishing counterattacks. The fighting, even for the fighting and suffering man on the front, had assumed a clear meaning. Intelligent, independent command with a single decision had again far advanced the limits of the possible which had long since appeared to have been passed.

Conclusions

What has been said concerning the bounds of what is possible, admissible, or to be expected can be nothing more than a series of thoughts and experiences whose general applicability definitely has need of critical checking. One thing, however, should be certain: The matter of these bounds is of an unusually problematical nature, since in connection with it the dilemma of decision prevails as never before in war. To be sure, the will to conquer must always constitute the court of last appeal. But to this will must be joined an instinct which points the way even where the path threatens to lose itself in the jungle of relativity. Knowledge of these bounds, of their dangers, of how to guard against them is, to be sure, no unconditional guarantee of the proper action. But while the step from knowledge to the application of knowledge is a large one, the step from lack of knowledge to application is still greater.

Soviet Eastern Policy

Digested by the MILITARY REVIEW from an article in the "Bulletin of the Institute for the Study of the USSR" (Germany) January 1956.

DURING World War II General John R. Deane, chairman of the American military mission to the Soviet Union, defined the foreign policy of the USSR as follows:

It is more probable that the Soviet Union handles her foreign relations much as a rider handles a spirited horse—giving it its head at times and holding a tight check on the reins at others—always keeping the horse headed toward the predetermined destination and bending its will to that of the rider.

Soviet policy in all spheres is directed toward the establishment of a worldwide Communist dictatorship. This aim has never been disguised; on the contrary, it has always been stressed as the inevitable historical development of mankind. Tactics may change, but the ultimate goal remains constant. The Soviet policy in Europe is at present to preserve the *status quo*. A leading Communist publication stated on the eve of the Geneva Conference:

In the Soviet Union no one is encroaching on the status quo, but there the real situation is taken into account and the starting point for attempts to find a constructive solution to international problems can be seen in it. . . . One must live in a world of reactionary fantasies to think that the workers of East Germany will agree to renounce their historical achievements for the pleasure of joining the Atlantic bloc. One must be completely divorced from reality to count on the Soviet Union becoming the assistant of the Western Powers in an undertaking like the inclusion of all Germany in the aggressive Atlantic bloc, which is directed against the Soviet Union and the people's democracies.

This point of view determined the So-

viet stand at the last Geneva Conference of foreign ministers.

In the Far East and Southeast Asia the Communist parties of the Soviet Union and China predominate, as the free world and the Southeast Asian countries themselves are fully aware. However, the aggressive policy of the Communist leaders met with a decisive rebuff from the United States and her allies in the form of SEATO, a collective defense pact. The Soviet and Chinese Communist parties were obliged to change their tactics. Now their immediate target is to disrupt and weaken the anti-Communist world and to ensure Asian neutrality in the cold war and "active peaceful coexistence." This became evident at the Bandung Conference.

Mao Tse-tung and the Soviet collective leadership are striving to extend the neutralist camp to include not only India, Indonesia, and Ceylon, but also Pakistan, the Philippines, and Thailand. The visit of Bulganin and Khrushchev to India, Burma, and Afghanistan was aimed at activating neutralist tendencies in those countries. These policies—the preservation of the *status quo* in Europe and the pursuit of neutralism and coexistence in the East—are only temporary, a tactical maneuver best suiting the Communists at the present moment.

The Soviet Government's interest in the countries of the East is nothing new. Lenin, as early as 20 November 1917, published his "Message to all Moslem Workers of Russia and the East," in which Persians, Turks, Indians, and Arabs were exhorted to lose no time in throwing off their back the capitalist enslavers of their countries and becoming the masters of their own lands.

Lenin contended that at that time the peoples of the East had already been drawn into the capitalist sphere and the workers were thus members of the world's proletariat. Therefore, the national liberation struggle being carried out by the workers and peasants of the East could not be separated from the war of liberation for the workers of the world and from the proletarian revolution.

Next, bearing in mind the peculiarities of individual states and peoples, particularly of countries bordering on the Soviet Union—Turkey, Iran, and Afghanistan—the Soviet Government adopted a different plan for the “war of liberation” of these peoples. In Moscow a general center, “The Moslem Central Committee,” was set up, which in December 1918 held a conference of representatives of Moslem countries to decide what forms propaganda in the Islamic world should take. The conference ended with the formation of the “Union for the Liberation of the East.”

The 1920 Baku Congress of Eastern Peoples, which was attended by 1,891 delegates, took up the banner of nationalism, against the wishes of Communist leaders, who came to the conclusion that the peoples of the East were, on the whole, by no means ready to accept a social revolution in the spirit of communism. For that reason the Communist leaders again changed their tactics and began to seek new ways of asserting an influence.

From 1918 to 1921 Communist parties and cells were created in Iran, Turkey, Afghanistan, Syria, Lebanon, and other Near Eastern countries. Enormous sums of money were spent on the organization and subversive activities of these groups. However, in almost every case, Communist propaganda met with strong opposition not only from the governments of the countries concerned, but also from religious circles. The Communists were forced to go underground.

This opposition once more caused a

change of tactics, and in 1935 the Seventh Comintern Congress adopted the following resolution:

In colonial and semicolonial countries the most important task of the Communists is to work to create an anti-Imperialist popular front. For this it is necessary to attract the broadest masses into the national liberation movement against growing Imperialist exploitation, against cruel enslavement, for the banishment of the Imperialists and for the independence of the country; it is necessary to participate actively in mass anti-Imperialist movements headed by national reformers, to obtain joint statements, on the basis of a concrete platform, with the national revolutionary and national reform organizations.

These instructions have served as a guide to Communist parties and Comintern agents ever since. The end of World War II saw an intensification of aggressive subversive activities in Iran and other Arab states, often with a certain amount of success. At the same time the Soviet Government tried by means of a coup to annex Persian Azerbaidzhan, and by diplomatic pressure compel Turkey to return the provinces of Kars, Ardahan, and Artvin, and to permit the construction of military bases in the Dardanelles. Claim was even laid to the former Italian colony of Tripolitania. All these demands were rejected by Iran and Turkey who were supported by the Western Powers.

After Stalin's death the collective leadership continued in essence his policies and tactics, in spite of constant assertions on the need for peaceful coexistence and the termination of the cold war. In the East the tactics of inciting extremes of nationalism and religious fervor in Iran and the Arab countries, as envisaged by the Seventh Comintern Congress, lost none of their force.

At present Communist policy and tac-

ties are directed not only toward supporting neutralist tendencies and peaceful co-existence but at preventing the formation of regional defense pacts among the Moslem countries, by propaganda methods, by hampering intercourse with the North Atlantic Pact countries, by preventing the establishment of normal relations between the Arab countries and Great Britain, France, and Turkey, and particularly by inflaming the conflict between Israel and the Arab League.

However, in spite of Soviet pressure, Iran joined the Baghdad Pact, thereby completing the mutual defense chain which stretches from Turkey to Pakistan. This pact, of great importance both in military and economic respects for the Moslem countries, is the Soviets' biggest diplomatic set back for some time. It is barely compensated for by their success in the arms deals with Egypt and other Arab countries. However, even the pact cannot be termed an unqualified success, since as yet the countries comprising the Arab League have categorically refused to associate themselves with it. The main cause of contention is probably Israel; and the guarantees given that country by Great Britain, France, and the United States aggravated the situation, further turning the Arab countries against the West.

The Soviet Union is openly on the side of the Arab countries in their struggle with Israel. Egypt particularly has been singled out for praise and friendly approaches, largely in an attempt to woo her away from the West and to ensure that the Israel question remains unsettled.

The supplying of Egypt with Czech arms was a cunning move, for the ensuing diplomatic pressure from the countries of the free world caused Egypt to swing further toward the Communists, since this pressure was viewed as interference in internal affairs. Then, in turn, Israel became alarmed and approached the West and the United States in particular for

arms and supplies to match the Czech deliveries.

The success of the Soviet policy can be judged from the statement made by Colonel Nasser on 2 October 1955 in Cairo on the occasion of his country's arms purchases from Czechoslovakia. He made it quite clear that he considered the real aim of the West to be not so much the preservation of peace as the maintenance of control over Egypt by arming Israel but keeping Egypt weak.

Thus the preservation of the *status quo* in Europe and the policy of neutrality and peaceful coexistence in the Far East have given the Soviet Government the chance to step up its policy in the Near and Middle East.

The Soviets are trying to turn to account the religious feelings of the countries of Islam, just as they have done in their own country. The fanaticism of certain Moslem groups makes it comparatively easy for the Communists to turn them, not always unwittingly, into tools, sometimes even agents, of communism. A similar process takes place with regard to the fervent patriotism found in the Moslem countries.

The formation of the State of Israel was of great direct use to the Communists. Since the Communist Party is not proscribed there, its activities are expanded to include not only Israel but also Palestine, Lebanon, Syria, and Jordan. In Tel Aviv and Jerusalem centers of propaganda destined for distribution in the Arab countries have been formed.

Communist propaganda has also penetrated into the 800,000 Arab refugees from Palestine and Jordan who, living in extremely poor conditions, are an easy target. These refugees all consider Israel their mortal enemy, and the Communists are not slow to exploit this feeling to their own ends, which in many respects are in direct opposition to those of the Arabs themselves.

BOOKS OF INTEREST TO THE MILITARY READER

ATOMS AND ENERGY. By Professor H. S. W. Massey. 174 Pages. The Philosophical Library, Inc., New York. \$4.75.

By MAJ WILLIAM W. COVER, *Arty*

Professor Massey's book should prove of distinct value to the prospective atomic weapons staff officer or the military student desiring to refresh his orientation to the atom.

In a short, tersely written volume the author, Professor of Physics in the University of London, discusses the atom under three broad headings: atomic structure and release of energy, applications of atomic energy, and current research in pure atomic physics. Laboratory techniques are described in sufficient detail to indicate the methods used by the nuclear physicist in his complex research.

Militarily, the author believes that small fission weapons in quantity would possess greater value than the large fusion weapons. However, he believes also that a system of international controls and inspection is required to preclude the manufacture and use of atomic weapons. Here the scientist enters the political arena and concludes merely with a restatement of the old dilemma: "Does disarmament *precede* or *follow* improved international relations?"

Of interest chiefly as a fine summary of the technical aspects of atomic energy, Professor Massey's book is best approached with some background knowledge of chemistry and physics.

THE LAMPS WENT OUT IN EUROPE. By Ludwig Reiners. Translated from the German by Richard and Clara Winston. 310 Pages. Pantheon Books, Inc., New York. \$5.00.

By LT COL ROBERT M. WALKER, *Arty*

This is a scholarly and factual narrative history of the sequence of blunders of the late nineteenth and early twentieth centuries that led Europe to war and Germany to collapse and catastrophe. Starting with a brilliant analysis of the German political picture when Bismarck came into authority, and a lucid description of the political machinations by which he brought about the realization of the German strength in the theater of world politics, the author ends with a brilliant but somewhat nationalistic chapter on why Germany lost World War I.

The author demonstrates that it was more capricious foolishness than wickedness that brought on the war. He covers the major figures in European politics with classical sketches and draws their characters in illuminating anecdotes.

This book places the human element in the foreground and gives history the suspense, color, and excitement of a novel. But it remains sound history, clearly based on facts which are marshaled and organized with impressive skill and ease. It is a must for the student of military or political history, and should be high on the reading list for those who like history to carry the elements of drama, suspense, and humanness.

THE CIVILIAN AND THE MILITARY.

By Arthur A. Ekirch, Jr. 340 Pages. Oxford University Press, New York. \$6.50.

By LT COL CECIL C. HELENA, *Inf*

This work represents extensive research and provides a splendid bibliography to the antimilitarist tradition in America. The last chapter, which deals with the post-World War II era, adequately presents the meat of the book. It should be read by career soldiers. The author notes an increased involvement of the military in foreign policy, science and industry, education, and the influencing of public opinion, then raises this important question: Is the domination of civilian America by the military bound to result?

The title is misleading, however; most of the book is devoted to a survey of antimilitarist sentiment in the United States since early time. It describes the struggle of "liberals, pacifists, and antimilitarists" against militarism in America. As the author uses the term, militarism encompasses every manifestation of military activity and seems at times to embrace terms such as preparedness and patriotism. While not specifically stated, there is an emphatic impression that most opponents of any form of military preparedness are righteous and that advocates of preparedness almost invariably are insidious. The military reader will learn that having been a career soldier he cannot ever again be privileged to harbor the democratic ideals which are the birthright of other Americans.

The author's extreme bias against anything military limits the effectiveness of his research. In effect, the book is a staff study written to bear out preconceived conclusions. Its almost complete lack of objectivity in presenting fact will prove distracting to scholar and soldier. One gets the impression that the author is entirely honest in his view but does not know whether he is tilting with men, monsters, or windmills.

GLOBAL LOGISTICS AND STRATEGY: 1940-1943. United States Army in World War II. By R. M. Leighton and R. W. Coakley. 780 Pages. Superintendent of Documents, United States Government Printing Office, Washington, D. C. \$6.25.

PARATROOPER. Second Edition. By Lieutenant Colonel Francis X. Bradley and Lieutenant Colonel H. Glen Wood. 110 Pages. The Military Service Publishing Co., Harrisburg, Pa. \$3.50.

By LT COL BENTON MCD. AUSTIN, *Inf*

In the words of the authors:

This is the story of the world's finest soldier. It tells of his training, his unit, and his airborne heritage. The parachute that floats him down from the sky. The airplanes that carry him into battle. The way he gets his equipment and supplies. The doctrine by which he fights, the emblems he wears, and the risks that he takes. . .

Whether the book lives up to this description is debatable. However, Colonels Bradley and Wood have assembled a collection of unusually good jump pictures, many of which are official United States Army or Air Force photographs. The accompanying text hammers away at the themes: jump training is rugged, and paratroopers are tough.

The book will sell well among the younger parachutists, those recently qualified, or still undergoing jump training. Outside of this group it is doubtful that *Paratrooper* will arouse much interest.

OUR FAMILY AFFAIRS. A Record and Guide. Prepared by Lieutenant Colonel Carroll V. Glines, Jr., United States Air Force. 160 Pages. Exposition Press, New York. \$3.00.

THE THEORY AND TECHNIQUE OF SHIP DESIGN. By George C. Manning. 278 Pages. John Wiley & Sons, Inc., New York and The Technology Press, Cambridge, Mass. \$10.00.

THIS IS ISRAEL. By Theodore Huebener and Carl Hermann Voss. 166 Pages. The Philosophical Library, Inc., New York. \$3.75.

By LT COL IRVING HEYMONT, *Inf*

The authors have presented a clear and concise picture of the historical and cultural background of Palestine and the Israelis from the earliest time up to the present. In an easy and interesting style, the salient facts are given of the history of the Jews, the development of Judaism, the origins of Christianity, the Saracen invasions, the Crusades, the Turkish rule, and the British mandate.

The struggles of Zionism and its leaders to secure a homeland for the Jews are briefly and adequately described. The establishment of the State of Israel, as well as its economic and cultural development, its difficulties, and its major institutions are portrayed with keen insight. The serious problems confronting the new republic are discussed, especially its relations with its Arab neighbors.

Although sympathetic to the Israelis, the treatment of the various religious and political issues are fair and objective. Unlike many of the recent books on Israel, this short volume is not a travelogue but a concise treatment of the current issues and their background. In view of the potential threat in current Israel-Arab relations, it is highly recommended to the military reader who desires a knowledge of the problems in the Israel area.

STILWELL'S COMMAND PROBLEMS. United States Army in World War II. By Charles F. Romanus and Riley Sunderland. 518 Pages. Superintendent of Documents, United States Government Printing Office, Washington, D. C. \$6.25.

THE FINAL SECRET OF PEARL HARBOR. By Rear Admiral Robert A. Theobald, United States Navy, Retired. 202 Pages. The Devin-Adair Co., New York. \$3.50.

LAND OF THE 500 MILLION. A Geography of China. By George B. Cressey. 380 Pages. McGraw-Hill Book Co., Inc., New York. \$10.00.

By LT COL HOWARD L. FELCHLIN, *Inf*

As a result of 8 years of residence in China and 30 years of studying the Chinese problem in all its aspects, Professor Cressey has prepared an authoritative, current, and detailed analysis of the people and geography of China. Covering such varied subjects as agriculture, natural resources, meteorology, commerce, industry, and geopolitics, the author has skillfully interpreted the current economic and political developments in this vital area of the Far East.

Complete with maps, statistical charts, recent photographs, and detailed factual data, this book represents an encyclopedia of knowledge on modern China.

The author points out that geography cannot pretend to solve China's many problems, but it provides an essential basis for the evaluation of her economic, social, and political potentials.

The considerable assets and inherent limitations of this immense country merit close scrutiny in view of Dr. Cressey's contention that given peace and a stable government, China may well become a major world power. Although plagued with domestic difficulties, peasant resistance, technical inadequacies, and associated shortcomings, the Chinese Communist regime is paralleling to a marked degree the dire tribulations which impeded the growth of her Soviet neighbor. The chapters on Taiwan, Manchuria, and Outer Mongolia supplement the basic study, and the author's comments on China's future prospects for internal development and improved foreign relations are of special interest.

This volume is not meant for the casual reader but rather for the serious student of the vital role that China will probably play in the world of tomorrow.

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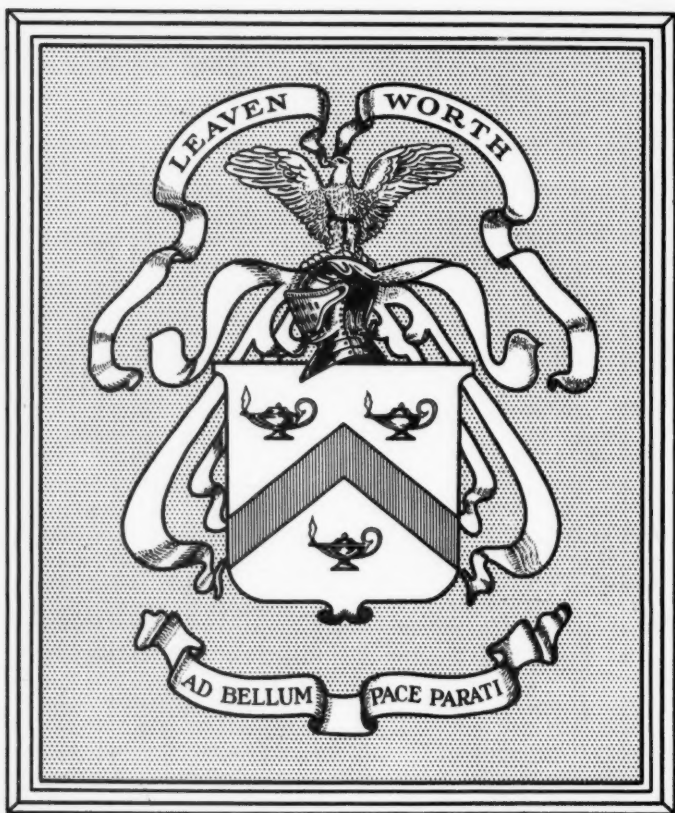
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